APPENDIX F

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-1

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Silty clay gravel, reddish to tannish, stiff		JAR PA-1 0'-1'		Used thin wall sampler (shelby Tube) Pushed 0'-1'
	1	Silty clay, reddish to grayish w/small gravel content		JAR PA-1 1'-2'		Pushed 1'-2'
	2	Clay, silty, reddish to grayish w/iron stains, very stiff		JAR PA-1 2'-3'		Pushed 2'-3'
	3	Clay, reddish to brownish some gravel content		JAR PA-1 3'-4'		Pushed 3'-4'
	4	Quartz Gravel		JAR PA-1 4'-5'		Pushed 4'-5'
	5	Quartz Gravel, w/30% clay silt, tannish		JAR PA-1 5'-6'		Pushed 5'-6'
	6	Silty clay to sandy, reddish to tannish w/some gravel content		JAR PA-1 6'-7'		Pushed 6'-7'
	7	Clay silt, tannish w/quartz gravel		JAR PA-1 7'-8'		Pushed 7'-8'
	8	BOTTOM OF HOLE 8'				AUGER REFUSIAL
	9					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-2

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Gravel w/clay silt		JAR PA-2 0'-1'		Used thin wall sampler (Shelby tube) Pushed 0'-1'
	1	Clay, reddish w/small amount of gravel		JAR PA-2 1'-2'		Pushed 1'-2'
	2	Clay, silt to sandy, reddish w/grayish seams		JAR PA-2 2'-3'		Pushed 2'-3'
	3	Clay, reddish to brown w/large amount of small gravel		JAR PA-2 3'-4'		Pushed 3'-4'
	4	Clay silt, reddish, iron stains & quartz up to 1"		JAR PA-2 4'-5'		Pushed 4'-5'
	5	Clay silt, reddish to brownish w/large amount of small gravel		JAR PA-2 5'-6'		Pushed 5'-6'
	6	Quartz gravel w/clay silt seams		JAR PA-2 6'-7'		Pushed 6'-7'
	7	Clay silt to sandy, tannish		JAR PA-2 7'-8'		Pushed 7'-8'
	8	Clay silt to sandy w/large amount of small gravel		JAR PA-2 8'-9'		Pushed 8'-9'
	9	Clay, gray w/iron stains		JAR PA-2 9'-10'		Pushed 9'-10'
	10					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-3

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

V.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Silty clay gravel, brownish				Push 0'-1'
	1	Clay; silty, w/gravel				Push 1'-2'
	2	Clay, reddish to tannish w/some gravel & iron stains				Push 2'-3'
	3	Clay, silt, sandy, w/large amounts of quartz gravel, reddish to grayish				Push 3'-4'
	4					
	5					AUGER REFUSIAL (QUARTZ GRAVEL)

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-4

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, silty gravel, tannish to reddish		JAR PA-4 0'-1'		Used thin wall sampler (Shelby tube) Pushed 0'-1'
	1	Clay, reddish to brownish very stiff		JAR PA-4 1'-2'		Pushed 1'-2'
	2	Silty clay to fine sandy reddish to grayish very stiff		JAR PA-4 2'-3'		Pushed 2'-3'
	3	Silty clay to fine sandy reddish to grayish		JAR PA-4 3'-4'		Pushed 3'-4'
	4	Silty clay gravel, light brown		JAR PA-4 4'-5'		Pushed 4'-5'
	5	Clay w/small gravel content reddish with gray seams		JAR PA-4 5'-6'		Pushed 5'-6'
	6	Clay, silty w/gravel, tannish to brownish		JAR PA-4 6'-7'		Pushed 6'-7'
	7	Clay, silty, gray w/iron stains very stiff		JAR PA-4 7'-8'		Pushed 7'-8'
	8			JAR PA-4 8'-9'		Pushed 8'-9'
	9			JAR PA-4 9'-10'		Pushed 9'-10'
	10					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-5

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Clay, reddish w/iron stains small amount of gravel very stiff		JAR PA-5 0'-2'		Used thin wall sampler (Shelby tube)
	2					Pushed 0'-2'
	2	Clay, silty, reddish to grayish w/iron stains very stiff		JAR PA-5 2'-4'		
	3					
	4					Pushed 2'-4'
	4	Clay, gray w/iron stained seams, very stiff		JAR PA-5 4'-6'		
	5					
	6					Pushed 4'-6'
	6			JAR PA-5 6'-8'		
	7					
	8					Pushed 6'-8'
	8	Clay, gray, very dry not as stiff		JAR PA-5 8'-10'		
	9					
	10					Pushed 8'-10'

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-6

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

V.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		sandy, clayey gravel, brownish (2")				Push 0'-1'
		Sandy w/clay & silt, tannish to reddish (7")				
	1	Clay to sandy gravel, brownish (3")				Push 1'-2'
		Sandy, clayey gravel, tannish to grayish				
	2	Sandy, clayey gravel (w/some large gravel), tannish to brownish				Push 2'-3'
	3	Sandy w/clay silt, w/small gravel, tannish				Push 3'-4'
	4					AUGER REFUSIAL

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-7

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	Clay, gravel, reddish to brownish				Push 0'-1'
1					Push 1'-2' moist
2	Clay to sandy, reddish to tannish w/gray seams & w/some iron stains				Push 2'-3'
3	Clay to sandy, gray, w/30% iron staining				Push 3'-4'
4	w/60% iron staining				Push 4'-5' stiffer
5	Clay to sandy, w/gravel (may be from above); brownish to reddish				Push 5'-6'
6	Clay to sandy, gray w/20% iron staining				Push 6'-7'
7	w/10% iron staining				Drive 7'-8'
8	w/20% iron staining				Push 8'-9' mosit
9	w/seams of iron stained, sandstone				Push 9'-10'
10					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-8

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, Gravel: Dark Brownish (6")				Pushed 0'-1'
	1	Clay, Gravel: Reddish (6")				
		Clay, silty to sandy: reddish				Pushed 1'-2'
	2					
		Clay, silty to sandy reddish to tannish				Push 2'-3'
	3					
		Clay, w/gravel: reddish to brownish				Push 3'-4'
	4					
		Clay, sandy, w/small pieces of gravel, tannish				Sample taken from auger
	5					AUGER REFUSIAL

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. PA-9

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay,gravel:brownish to reddish(4")				Push 0'-1'
		Clay, gravel: brownish (8")				
	1	Clay, sandy, bright reddish				Push 1'-2' Stiff
	2	Some tannish stains				Push 2'-3'
	3	Sandy to clay, reddish				Push 3'-4' Very stiff
	4					AUGER REFUSIAL (BITS OF QUARTZ GRAVEL)

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

PA-10
HOLE NO.

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

CV.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, silty, brownish w/gravel(6")				Push 0'-1'
		Clay, silty, brownish to grayish w/gravel (6")				
	1	Clay, silty to sandy w/large gravel, reddish to brownish				Push 1'-2'
	2					AUGER REFUSIAL (QUARTZ GRAVEL)

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

PA-11
HOLE NO.

PROJECT THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

LEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, gravel, brownish to tannish (6")				Push 0'-1'
	1	Clay, gravel: tannish to grayish (14")				Push 1'-2'
	2	Sandy to clayey: reddish to tannish (16")				Push 2'-3'
	3	Clayey to sandy w/small gravel reddish to brownish				Push 3'-4'
	4					AUGER REFUSIAL (SMALL BITS OF QUARTZ GRAVEL ON AUGER)

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

PA-12
HOLE NO.

OJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

EV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, gravel, brownish (6")				Push 0'-1'
		Clay, gravel, brownish to grayish (6")				
	1	Sandy, reddish to brownish				Push 1'-2'
	2	Sandy to clayey, reddish to tannish				Drive 2'-3'
	3	Sandy to clayey, w/some small gravel, reddish to brownish				Push 3'-4' stiffer
	4					AUGER REFUSIAL

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

PA-13
HOLE NO.

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

V.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Sand: Tannish to brownish (4")				Push 0'-1'
		Clay, gravel: reddish to brownish (8")				stiff
	1	Clay to sandy w/some gravel reddish to brownish				Push 1'-2' stiff
	2	Clay to sandy Quartz gravel				Push 2'-3'
	3					AUGER REFUSIAL
	4					
	5					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 1.3
HOLE NO.

ECT THOMASON LUMBER COMPANY.

ELEVATION TOP OF HOLE

SHEET 1 OF 2 SHEETS

DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
1	Clay, silt, gravel: brownish				Push 0'-2'
2					
3	Clay, silty, brownish to reddish w/some iron stains				Push 2'-4' wet
4					
5	Clay, silty, reddish, some iron stains, large amounts of small gravel				Push 4'-6'
6					
7	Clay, gray w/iron stains				Push 6'-8' Very soft
8					
9	Clay, silty, some gravel, reddish w/some gray				Push 8'-10'
10					
11	Sand, reddish to brownish w/clay sity & seams of gray clay				Push 10'-12'
12					
13	Clay, gray w/iron stains				Drive 12'-14'
14					
15	Clay, w/small amount of gravel, reddish to grayish				Push 14'-16'
16					
17	Clay, silt, sandy, reddish to tannish w/iron staining (50%)				Push 16'-18'
18					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. SP - 1.3

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	18	Sandstone, dark reddish, w/clay silt & gray clay seams				Push 18'-20'
	19					
	20	Clay, silt, sandy , grayish to tannish w/iron stains				Drive 20'-22'
	21					
	22	Clay, reddish				Drive 22'-24' Very stiff
	23					
	24	Clay, w/small amount of gravel, reddish, w/small amount of iron stains				Push 24'-26'
	25					
	26	Clay, silt sandy, tannish w/iron stain				Push 26'-28' Moist
	27					
	28	Clay, silty to sandy, tannish to brownish				Push 28'-30'
	29					
	30					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2386

SP - 1.1
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Silty clay gravel, brownish w/iron stains				Push 0'-2'
	2	Clay, silty to sandy, reddish to light brownish				Push 2'-4' Slight chemical Odor
	4	Clay, gray w/iron stains				Push 4'-6' Chemical Odor
	6	Clay, silt w/gravel, brownish to grayish				Push 6'-8' Chemical Odor
	8	Clay, silty, gray w/some iron stains				Push 8'-10' Chemical Odor
	10	Clay, reddish w/gray seams				Push 10'-12' Slight Chemical Odor Very Stiff
	12	Clay, silt, reddish to tannish w/iron stain				Push 12'-14' Slight Chemical Odor Very Stiff
	14					Push 14'-16' Same as 12'-14' Increase in Iron Stain
	16	Clay, reddish to tannish some iron stains				Push 16'-18' Very Stiff
	18					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 1.1
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	18	Clay, silty, tannish w/iron stains				Drive 18'-20' Some Oil Stains & Odor
	19					
	20					Push 20'-22'
	21					
	22					Push 22'-24' Increase in Oil Staining
	23					
	24	Clay, reddish to tannish				Push 24'-26' Some Chemical Odor Very Stiff
	25					
	26	Clay, silty to sandy, tannish to brownish, w/iron, manganese & possible oil stains				Push 26'-28'
	27					
	28	Sand, tannish to grayish				Drive 28'-30' Slight Chemical Odor
	29					
	30					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

HOLE NO. SP - 1.2

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Clay, silt, gravel, brownish				Push 0'-2'
	2	Clay, silty, brownish w/iron stains				Push 2'-4' Wet Chemical Odor
	4	Clay, gray, w/iron stains (20%)				Push 4'-6' Slight Chemical Odor
	6					Push 6'-8' Same as 4'-6'
	8	w/iron stains (40%)				Push 8'-10' Same as 4'-6'
	10	Clay, reddish w/some gray w/heavy iron staining				Push 10'-12' Very Stiff Slight Chemical Odor Oil From Hole on Drill Stem
	12	Clay, silty, reddish to tannish w/seams of gray				Drive 12'-14'
	14	Clay, reddish w/gray seams & seams of gravel				Push 14'-16' Very Stiff Some Free Oil
	16	Clay, reddish to tannish some gray seams				Push 16'-18' Very Stiff Chemical Odor
	18					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 1.2
HOLE NO.

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2
OF 2 SHEETS

Y.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	18	Clay, silty to sandy, tannish to grayish, iron stains & some oil stains				Drive 18'-20'
	19					
	20	Clay, silty to sandy, reddish to tannish				Push 20'-22' Chemical Odor
	21					
	22	Clay, silty, tannish w/iron stains				Drive 22'-24'
	23					
	24	Clay, reddish to tannish w/iron stains				Push 24'-26'
	25					
	26	Clay, silty to sandy w/iron & manganese stains				Push 26'-28'
	27					
	28	Sand, tannish to grayish				Drive 28'-30'
	29					
	30					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 2.3
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 2 SHEETS

LEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	0	Sawdust, rotten				Push 0'-2' Shelby Tube
	1	Clay & gravel, brown				
	2	Sawdust, blackish brown				Push 2'-4' Slight Chemical Odor
	3					
	4					Push 4'-6'
	5					
	6	Clay, silt, grayish w/tan to reddish seams				Push 6'-8' Slight Chemical Odor
	7					
	8	Clay, silty, grayish to tannish				Push 8'-10' Moist
	9	Clay, silty & sandy, reddish to grayish				Very Stiff
	10	Clay, silty, grayish to tannish, w/red to black stains				Push 10'-12'
	11					
	12	Clay, silty & sandy, brownish w/gray seams				Push 12'-14' Higher Water Content
	13					
	14					Push 14'-16'
	15	Clay, grayish to light tannish				Slight Chemical Odor
	16	Clay, gray w/iron stains				Push 16'-18'
	17					Very Stiff
	18					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 2.3
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	18					Push 18'-20'
	19					
	20					Push 20'-22'
	21					Increase in Water Content
	22	Clay, grayish w/iron stains				Push 22'-24' Very Stiff
	23					
	24	Clay, silt, tannish to grayish w/small seams of manganese & iron stains				Push 24'-26'
	25					
	26	Clay, silty, grayish to tannish w/small (?) seams of manganese				Push 26'-28'
	27					
	28	Clay, silty to sandy, grayish to brown				Push 28'-30' Stiff
	29					
	30					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 2.2
HOLE NO.

OJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 2 SHEETS

EV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, silty, gray to light tannish		JAR SP-2.2 18'-19'		Used split Tube Sampler top of water in Hole Pushed 18'-19'
	19	Clay, silty, tannish to brownish		JAR SP-2.2 19'-20'		Used thin wall sampler (SHELBY TUBE) Slight Chemical Odor Pushed 19'-20'
	20			JAR SP-2.2 20'-21'		Pushed 20'-21'
	21	Clay, silty, tannish to brownish stiff		JAR SP-2.2 21'-22'		Pushed 21'-22'
	22			JAR SP-2.2 22'-23'		Used spilt tube samples Pushed 22'-23'
	23	Clay silt, tannish to gray w/seams of manganese		JAR SP-2.2 23'-24'		Used thin wall sampler (SHELBY TUBE) Pushed 23'-24'
	24			JAR SP-2.2 24'-25'		Used spilt tube sampler Pushed 24'-25'
	25			JAR SP-2.2 25'-26'		Used thin wall samplers (SHELBY TUBE) Pushed 25'-26'
	26	Clay silt, tannish w/seams of manganese - wet seams & iron stains		JAR SP-2.2 26'-27'		Pushed 26'-27'
	27	Clay, silt, tannish to light brown iron stains w/some manganese		JAR SP-2.2 27'-28'		Pushed 27'-28'
	28	Clay sandy, gray to reddish w/iron stains very stiff		JAR SP-2.2 28'-29'		Pushed 28'-29'
	29			JAR SP-2.2 29'-30'		Pushed 29'-30'
	30					

RILLING LOG (Cont. sheet) | B&F ENGINEERING, INC. 928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366 | SP - 2.2 HOLE NO.

JECT THOMASON LUMBER COMPANY | ELEVATION TOP OF HOLE | SHEET 1 OF 2 SHEETS

Y.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Silty clay gravel, tannish brown		JAR SP-2.2 0'-1'		Used thin wall sampler (SHELBY TUBE) Pushed 0'-1'
	1			JAR SP-2.2 1'-2'		Pushed 1'-2'
	2			JAR SP-2.2 2'-3'		Slight Chemical Odor & Black Stains Pushed 2'-3'
	3	Silty clay gravel, brown		JAR SP-2.2 3'-4'		Pushed 3'-4'
	4			JAR SP-2.2 4'-5'		Used spilt tube sampler Very Moist Pushed 4'-5'
	5	Clay gravel brown with reddish seams		JAR SP-2.2 5'-6'		Used thin wall sampler (SHELBY TUBE.) Slight Chemical Odor. Pushed 5'-6'
	6	Clay small amount of gravel, gray w/reddish seams		JAR SP-2.2 6'-7'		Slight Chemical Odor Pushed 6'-7'
	7	Clay, silty gravel, tannish to brown		JAR SP-2.2 7'-8'		Slight Chemical Odor Pushed 7'-8'
	8			JAR SP-2.2 8'-9'		Pushed 8'-9'
	9	Clay, gray w/reddish seams some gravel		JAR SP-2.2 9'-10'		Pushed 9'-10'
	10	Clay, silty reddish to gray med. grain size		JAR SP-2.2 10'-11'		Slight Chemical Odor Pushed 10'-11'
	11			JAR SP-2.2 11'-12'		Pushed 11'-12'
	12	Clay, silty, gray to reddish		JAR SP-2.2 12'-13'		Pushed 12'-13'
	13	Clay, silty, gray to reddish w/iron stains		JAR SP-2.2 13'-14'		Pushed 13'-14'
	14	Clay, gray to tannish		JAR SP-2.2 14'-15'		Slight Chemical Odor Pushed 14'-15'
	15			JAR SP-2.2 15'-16'		Wet Seams Pushed 15'-16'
	16	Clay, silty, gray w/iron stains		JAR SP-2.2 16'-17'		Pushed 16'-17'
	17	Clay, silty, gray to tannish		JAR SP-2.2 17'-18'		Pushed 17'-18'
	18					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 2.1
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Clay, silty, gray w/iron stains		JAR SP-2.1 18'-19'		Used spilt tube sampler Pushed 18'-19'
	19	Silt, clayey, iron stained		JAR SP-2.1 19'-20'		Used thin wall sampler (SHELBY TUBE) Pushed 19'-20'
	20			JAR SP-2.1 20'-21'		Used spilt tube sampler Pushed 20'-21'
	21	Clay, silty, gray w/iron stains 50% manganese stains along bedding planes		JAR SP-2.1 21'-22'		Used thin wall sampler (SHELBY TUBE) Dry & Stiff Pushed 21'-22'
	22	Clay, silty, gray Very Stiff		JAR SP-2.1 22'-23'		Pushed 22'-23'
	23	Clay, silty, gray, very stiff w/zone of tan clayey/silt @23.5'		JAR SP-2.1 23'-24'		Pushed 23'-24'
	24	Clay, silty, gray 50% of sample silty clay w/manganese on bedding plane		JAR SP-2.1 24'-25'		Pushed 24'-25'
	25	Clay, silty to fine sandy to sand, silty, fine clayey gravel w/iron stains.		JAR SP-2.1 25'-26'		Used split tube sampler Pushed 25'-26'
	26	Sand, silty-fine-clayey, gray w/iron stains		JAR SP-2.1 26'-27'		Used thin wall sampler (SHELBY TUBE) Pushed 26'-27'
	27	Manganese stains on bedding planes		JAR SP-2.1 27'-28'		Used spilt tube sampler Pushed 27'-28'
	28	Sand, fine-medium, clayey		JAR SP-2.1 28'-29'		Used thin walled sampler (SHELBY TUBE) Pushed 28'-29'
	29	Iron stained tan		JAR SP-2.1 29'-30'		Used spilt tube sampler Pushed 29'-30'
	30					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

SP - 2.1
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
				JAR SP-2.1 0'-1'		Used thin walled sampler (SHELBY TUBE) Pushed 0'-1'
	1	Silty clay gravel, tannish brown		JAR SP-2.1 1'-2'		Pushed 1'-2'
	2			JAR SP-2.1 2'-3'		Pushed 2'-3'
	3	Clayey gravelly silt, brown		JAR SP-2.1 3'-4'		Pushed 3'-4'
	4	Silty gravelly clay, brown		JAR SP-2.1 4'-5'		Pushed 4'-5'
	5			JAR SP-2.1 5'-6'		Slight Chemical Odor Pushed 5'-6'
	6	Silty gravelly clay, red		JAR SP-2.1 6'-7'		Pushed 6'-7'
	7			JAR SP-2.1 7'-8'		Pushed 7'-8'
	8	Silty gravelly clay, red w/gray seams		JAR SP-2.1 8'-9'		Slight Chemical Odor Pushed 8'-9'
	9	Brown silty clay w/gravel		JAR SP-2.1 9'-10'		Pushed 9'-10'
	10	Reddish gravelly clay		JAR SP-2.1 10'-11'		Slight Chemical Odor Pushed 10'-11'
	11	Clay, gray, stiff w/iron stains		JAR SP-2.1 11'-12'		Pushed 11'-12'
	12			JAR SP-2.1 12'-13'		Pushed 12'-13'
	13	Clay, silty to very stiff gray w/iron stains		JAR SP-2.1 13'-14'		1st 8"-80% Stain 2nd 4"-20% Stain Pushed 13'-14'
	14	Clay, very stiff gray w/slight iron staining		JAR SP-2.1 14'-15'		Pushed 14'-15'
	15	Clay to sandy, gray to tannish		JAR SP-2.1 15'-16'		Slight Chemical Odor Pushed 15'-16'
	16			JAR SP-2.1 16'-17'		Pushed 16'-17'
	17	Clayey silt, tan		JAR SP-2.1 17'-18'		Saturated Water @ 17'-18' Pushed 17'-18'
	18					

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2386

BG - 1
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Clay & silt, reddish to Lt. tan				Pushed 0'-2'
	2					
	3	Clay & silt, sandy w/small amount of gravel, reddish to tannish				Pushed 2'-4'
	4					
	5					Pushed 4'-6' Stiffer than above
	6					
	7	Clay & silt, sandy w/small amount of gravel, reddish				Pushed 6'-8'
	8					
	9	Clay, gray w/iron stains				Pushed 8'-10' Very Stiff
	10					
	11	Clay & silt, gray to tannish				Drive 10'-12' Not as Stiff Water accumulation in bore hole (11' 4")
	12					
	13	Sand, light tan to grayish				Drive 12'-14' Very moist Tendency to slough
	14					
	15	Sand, light tan to grayish w/small amount of clay & silt, reddish				Pushed 14'-16'
	16					
	17					Drive 16'-18'
	18	Clay, grayish				Very Stiff

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

BG - 1
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	18	Clay, grayish				Pushed 18'-20' Very Stiff
	19					
	20	Clay & silt, sandy, grayish to tannish, w/some iron stains & w/some manganese				Drive 20'-22'
	21					
	22	Clay & silt, sandy, brownish to grayish, w/seams of manganese & iron stains				Pushed 22'-24'
	23					
	24					Pushed 24'-26' Increase in staining
	25					
	26	Clay & silt, dark brown w/iron staining				Pushed 26'-28'
	27					
	28					Drive 28'-30' Increase in staining Some wet zones
	29					
	30					No Chemical Odor detected on any of these samples

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

BG - 2
HOLE NO.

SHEET 2
OF 2 SHEETS

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	18	Clay & silt, tannish to grayish				Drive 18'-20' Very Stiff
	19					
	20	Clay, gray w/some iron stains				Pushed 20'-22' Very Stiff
	21					
	22					Pushed 22'-24' Some wet zones
	23					
	24					Drive 24'-26' Same as 22'-24'
	25					
	26	Clay & silt, tannish to greenish w/iron stains				Pushed 26'-28' w/wet zones
	27					
	28	Clay & silt, sandy, tannsih, w/some seams of manganese				Drive 28'-30'
	29					
	30					

RILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

BG - 2
HOLE NO.

JECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 2 SHEETS

V.	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Clay, sandy, silty w/gravel, brown				Pushed 0'-2'
	2	Clay & gravel, reddish				
	3	Clay, w/some gravel tannish to grayish w/iron stains				Pushed 2'-4'
	4					
	5	Clay & silt, sandy, w/very small gravel				Pushed 4'-6'
	6					
	7					Pushed 6'-8' Stiffer
	8					
	9					Pushed 8'-10' More gravel
	10					
	11	Clay, gray to tannish w/iron stains				Pushed 10'-12'
	12					
	13	Sand, tan to grayish				Pushed 12'-14' Very moist Water in hole
	14					
	15					Drive 14'-16'
	16					
	17					Pushed 16'-18' - difficulty w/sand spilling into boring --- Very Stiff
	18	Clay, tannish				

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

BG - 3
HOLE NO.

OJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

EV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
	1	Gravel w/clay silt		JAR BG-3 0'-1'		Used thin wall sampler (SHELBY TUBE) Pushed 0'-1'
		Silty clay gravel, tannish		JAR BG-3 1'-2'		Pushed 1'-2'
	2	Silty clay, tannish to brownish w/smaller amount of gravel		JAR BG-3 2'-3'		Pushed 2'-3'
	3			JAR BG-3 3'-4'		Pushed 3'-4'
	4	Silty clay to sandy, dark brown to black, moist		JAR BG-3 4'-5'		Pushed 4'-5'
	5			JAR BG-3 5'-6'		Some Old wood products Pushed 5'-6'
	6	Quartz gravel very hard				
		Bottom of Hole 6'				AUGER REFUSIAL

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

BG - 4
HOLE NO.

PROJECT
THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE

SHEET 1 OF 1 SHEETS

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Gravel w/clay silt		JAR BG-3 0'-1'		Used thin wall sampler (SHELBY TUBE) Pushed 0'-1'
	1	Silty clay gravel, tannish to brownish		JAR BG-3 1'-2'		Pushed 1'-2'
	2	Silty to sandy gravel, brownish to black		JAR BG-3 2'-3'		Pushed 2'-3'
	3	Silty clay gravel, tannish to brownish		JAR BG-3 3'-4'		Pushed 3'-4'
	4	Bottom of Hole 4'				AUGER REFUSIAL

DRILLING LOG (Cont. sheet)

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

BG - 5
HOLE NO.

SHEET 1 OF 1 SHEETS

PROJECT: THOMASON LUMBER COMPANY

ELEVATION TOP OF HOLE:

ELEV. a	DEPTH b	DESCRIPTION c	USC USGS d	SAMPLE INTERVAL e	GRAPHIC LOG f	REMARKS (Blow count, pull information, % core recovery, significant observations)
		Gravel w/clay silt		JAR BG-5 0'-1'		Pushed 0'-1'
	1	Clay silt gravel, tannish to brownish		JAR BG-5 1'-2'		Pushed 1'-2'
	2	Clay silt to sandy, reddish		JAR BG-5 2'-3'		
	3	Clay silt to sandy, reddish w/small amount of quartz gravel		JAR BG-5 3'-4'		Pushed 3'-4'
	4	Bottom of Hole 4'				AUGER REFUSIAL

APPENDIX G

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

SEP 29 1987

3400 Asher Avenue
Little Rock, Arkansas 72204
(501) 664-5060

B & F Engineering, Inc. (C-25)
928 Airport Road
Hot Springs, AR 71913-4697

September 28, 1987

ATTN: Mr. Bill Humphries

Control No. 12181

Description of Sample: Five (5) soil samples received on 8/12/87;
Re: Thomason Lumber Company

Results:

Sample Identification	PCP ppm	Naphthalene ppm	Acenapthalene ppm	Fluoranthrene ppm
HA-1, 0-1 ft., Wood Treatment Process Area, 8/10/87, 2:00 p.m.	75	<0.5	<0.5	18
HA-1, 1-2 ft., Wood Treatment Process Area, 8/11/87, 8:00 a.m.	3.9	<0.5	<0.5	10
HA-1, 2-3 ft., Wood Treatment Process Area, 8/11/87, 10:00 a.m.	6.2	<0.5	<0.5	3.4
HA-5, 0-1 ft., Resources Recovery Area, 8/11/87, 11:00 a.m.	3.9	<0.5	<0.5	3.6
HA-5, 1-2 ft., Resources Recovery Area, 8/11/87, 1:00 p.m.	2.6	<0.5	<0.5	4.0

Method: EPA 3550, 8100, 8040

Remarks: Results are presented on a dry weight basis.

AMERICAN INTERPLEX CORPORATION

By _____
Lydia Morton, Lab Director

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

3400 Asher Avenue
Little Rock, Arkansas 72204
(501) 664-5060

B & F Engineering, Inc. (C-25)
928 Airport Road
Hot Springs, AR 71913-4697

September 29, 1987

ATTN: Mr. Bill Humphries

Control No. 12531

Description of Sample: Six (6) soil samples received on 9/04/87;
Re: Thomason Lumber Company

Results:

Sample Identification	EP-Toxicity PCP ppm	Naphthalene ppm	Acenapthalene ppm	Fluoranthrene ppm
HA-3, 0-1 ft., Process Area, 9/3/87, 7:30 am	3.0	<0.014	<0.014	<0.014
HA-3, 1-2 ft., Process Area, 9/3/87, 8:45 am	2.1	<0.014	<0.014	<0.014
HA-3, 2-3 ft., Process Area, 9/3/87, 9:30 am	0.026	<0.02	<0.02	<0.02
HA-5, 0-1 ft., Resources Rec. Area, 9/3/87, 2:15 pm	0.021	<0.012	<0.012	0.018
HA-5, 1-2 ft., 9/3/87	1.8	<0.012	<0.012	0.033
HA-4, 0-1 ft., Process Area, 9/4/87, 8:00 am	1.3	<0.012	<0.012	0.022

Method: EPA Test Methods for Evaluating Solid Waste, SW-846; EPA 8040, 8100

AMERICAN INTERPLEX CORPORATION

By _____
Lydia Morton, Lab Director

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

3400 Asher Avenue
Little Rock, Arkansas 72204
(501) 664-5060

B & F Engineering, Inc. (C-25)
928 Airport Road
Hot Springs, AR 71913-4697

November 10, 1987

ATTN: Mr. Jerry Overton

Control No. 13066

Description of Sample: One hundred ten (110) soil samples received on 10/14/87; Re: Thomason Lumber Company, Broken Bow, OK; 7-2397-0101

Results:

SEE ATTACHED DATA SHEETS

Method: EPA 3550, 8010, 8040

Remarks: Results are reported on a dry weight basis.

cc: Mr. Earl Hayes, President
Thomason Lumber & Timber Company
Post Office Drawer 278
Broken Bow, OK 74738

AMERICAN INTERPLEX CORPORATION

By _____
Lydia Morton, Lab Director

B & F Engineering
November 10, 1987

Control No. 13066
(Page 1 of 3 Pages)

Station No.	Station Location	Date	Time	Pentachlorophenol, ppm	Naphthalene, ppm	Acenaphthylene, ppm	Fluoranthene, ppm	Moisture %
PA-5	0'-2'	10/11/87	2:18 pm	<0.05	<0.1	<0.1	<0.1	13.5
PA-5	2'-4'	10/11/87	2:23 pm	<0.05	<0.1	<0.1	<0.1	12.7
PA-5	4'-6'	10/11/87	2:27 pm	<0.05	<0.1	<0.1	<0.1	10.4
PA-5	6'-8'	10/11/87	2:32 pm	<0.05	<0.1	<0.1	<0.1	11.4
PA-5	8'-10'	10/11/87	2:40 pm	0.31	<0.1	2.1	1.1	10.7
BG-2	0'-2'	10/12/87	8:12 am	<0.05	<0.1	<0.1	<0.1	7.09
BG-2	2'-4'	10/12/87	8:16 am	<0.05	<0.1	<0.1	<0.1	9.38
BG-2	4'-6'	10/12/87	8:23 am	<0.05	<0.1	<0.1	<0.1	12.1
BG-2	6'-8'	10/12/87	8:35 am	<0.05	<0.1	<0.1	<0.1	9.92
BG-2	8'-10'	10/12/87	8:46 am	<0.05	<0.1	<0.1	<0.1	7.46
BG-2	10'-12'	10/12/87	8:53 am	<0.05	<0.1	<0.1	<0.1	10.6
BG-2	12'-14'	10/12/87	9:07 am	<0.05	<0.1	<0.1	<0.1	10.5
BG-2	14-16	10/12/87	9:15 am	<0.05	<0.1	<0.1	<0.1	13.4
BG-2	16-18	10/12/87	10:00 am	<0.05	<0.1	<0.1	<0.1	12.2
BG-2	18'-20'	10/12/87	10:30 am	<0.05	<0.1	0.24	<0.1	11.8
BG-2	20'-22'	10/12/87	10:47 am	<0.05	0.40	<0.1	<0.1	11.6
BG-2	22'-24'	10/12/87	10:55 am	<0.05	<0.1	<0.1	<0.1	15.1
BG-2	24'-26'	10/12/87	11:00 am	<0.05	<0.1	<0.1	<0.1	9.80
BG-2	26'-28'	10/12/87	11:19 am	<0.05	<0.1	<0.1	<0.1	15.6
BG-2	28'-30'	10/12/87	11:27 am	<0.05	<0.1	<0.1	<0.1	13.0
PA-2	0'-1'	10/12/87	1:33 pm	<0.05	<0.1	<0.1	<0.1	16.1
PA-2	1'-2'	10/12/87	1:35 pm	<0.05	<0.1	<0.1	<0.1	14.3
PA-2	2'-3'	10/12/87	1:37 pm	0.15	<0.1	<0.1	0.35	12.2
PA-2	3'-4'	10/12/87	1:42 pm	0.21	<0.1	<0.1	<0.1	9.51
PA-2	4'-5'	10/12/87	1:51 pm	0.051	<0.1	<0.1	<0.1	6.84
PA-2	5'-6'	10/12/87	1:58 pm	<0.05	<0.1	<0.1	<0.1	5.17
PA-2	6'-7'	10/12/87	2:05 pm	<0.05	<0.1	<0.1	<0.1	5.57
PA-2	7'-8'	10/12/87	2:08 pm	<0.05	<0.1	<0.1	<0.1	4.86
PA-2	8'-9'	10/12/87	2:11 pm	0.83	<0.1	0.33	0.26	10.5
PA-2	9'-10'	10/12/87	2:13 pm	4.5	<0.1	0.33	0.24	12.5
SP 1.1	0-2	10/13/87	8:09 am	49	<1	14	5.6	5.02
SP 1.1	2-4	10/13/87	8:12 am	60	<1	29	24	9.05
SP 1.1	4-6	10/13/87	8:20 am	23	2.5	15	13	11.6
SP 1.1	6-8	10/13/87	8:24 am	53	3.5	23	19	13.2
SP 1.1	8-10	10/13/87	8:30 am	2.6	<0.1	1.9	1.3	11.9
SP 1.1	10-12	10/13/87	8:44 am	12	<1	5.0	4.6	9.31
SP 1.1	12-14	10/13/87	8:50 am	0.44	<0.1	0.28	0.19	9.65

Station No.	Station Location	Date	Time	Pentachlorophenol, ppm	Naphthalene, ppm	Acenaphthylene, ppm	Fluoranthene, ppm	Moistu x
SP 1.1	14-16	10/13/87	9:05 am	0.10	<0.1	0.23	<0.1	11.0
SP 1.1	16-18	10/13/87	9:11 am	0.22	<0.1	0.25	<0.1	10.0
SP 1.1	18-20	10/13/87	9:14 am	12	<1	4.2	3.5	11.1
SP 2.2	0-1	10/09/87	7:54 am	60	<1	7.1	<1	8.50
SP 2.2	1-2	10/09/87	7:56 am	120	<1	18	6.9	5.98
SP 2.2	2-3	10/09/87	8:01 am	62	<10	120	440	8.59
SP 2.2	3-4	10/09/87	8:06 am	110	<1	23	20	3.34
SP 2.2	4-5	10/09/87	8:11 am	130	<10	180	170	14.1
SP 2.2	5-6	10/09/87	8:16 am	2.2	<1	17	32	14.5
SP 2.2	6-7	10/09/87	8:24 am	5.9	4.1	16	34	16.3
SP 2.2	7-8	10/09/87	8:28 am	170	<10	140	170	10.7
SP 2.2	8-9	10/09/87	8:33 am	130	<10	95	130	10.2
SP 2.2	9-10	10/09/87	8:40 am	1.5	<1	0.71	1.8	16.5
SP 2.2	10-11	10/09/87	8:53 am	1.9	<1	2.8	4.8	13.5
SP 2.2	11-12	10/09/87	9:00 am	3.9	<1	3.8	5.9	10.3
SP 2.2	12'-13'	10/09/87	9:08 am	0.11	<0.1	<0.1	<0.1	11.6
SP 2.2	13'-14'	10/09/87	9:11 am	8.6	<1	7.2	16	14.7
SP 2.2	14'-15'	10/09/87	9:24 am	1.8	<0.1	1.0	1.5	13.3
SP 2.2	15'-16'	10/09/87	9:28 am	0.43	<0.1	0.14	0.18	16.6
SP 2.2	16'-17'	10/09/87	9:31 am	0.18	<0.1	<0.1	<0.1	10.6
SP 2.2	17'-18'	10/09/87	9:44 am	0.55	<1	1.5	6.8	13.3
SP 2.2	18'-19'	10/09/87	9:50 am	0.23	<0.1	0.19	0.22	10.1
SP 2.2	19'-20'	10/09/87	10:02 am	1.1	<0.1	0.35	0.81	11.5
SP 2.2	20'-21'	10/09/87	10:08 am	<0.05	<0.1	<0.1	<0.1	10.6
SP 2.2	21'-22'	10/09/87	10:10 am	7.9	<1	1.9	7.3	11.6
SP 2.2	22'-23'	10/09/87	10:24 am	<0.05	<0.1	0.14	<0.1	12.8
SP 2.2	23'-24'	10/09/87	10:56 am	0.084	<0.1	0.16	0.18	12.3
SP 2.2	24'-25'	10/09/87	11:56 am	<0.05	<0.1	0.27	0.23	13.0
SP 2.2	25'-26'	10/09/87	12:05 pm	<0.05	<0.1	<0.1	<0.1	10.4
SP 2.2	26'-27'	10/09/87	12:12 pm	0.054	<0.1	0.17	0.27	11.9
SP 2.2	27'-28'	10/09/87	12:19 pm	<0.05	<0.1	0.22	0.21	12.7
SP 2.2	28'-29'	10/09/87	12:45 pm	<0.05	<0.1	0.21	0.18	10.4
SP 2.2	29'-30'	10/09/87	12:50 pm	<0.05	<0.1	0.14	0.15	11.5
PA-4	0'-1'	10/10/87	7:58 am	5.7	<1	0.34	1.2	4.48
PA-4	1'-2'	10/10/87	8:04 am	3.0	<0.1	<0.1	<0.1	4.62
PA-4	2'-3'	10/10/87	8:11 am	0.26	<0.1	0.14	<0.1	11.7
PA-4	3'-4'	10/10/87	8:16 am	0.38	<0.1	<0.1	<0.1	9.80

Station No.	Station Location	Date	Time	Pentachlorophenol, ppm	Naphthalene, ppm	Acenaphthylene, ppm	Fluoranthene, ppm	Moisture %
PA-4	4'-5'	10/10/87	8:23 am	7.6	(0.1	(0.1	(0.1	6.53
PA-4	5'-6'	10/10/87	8:31 am	6.8	(0.1	0.93	(0.1	9.51
PA-4	6'-7'	10/10/87	8:41 am	6.8	(0.1	(0.1	0.14	10.7
PA-4	7'-8'	10/10/87	8:52 am	0.56	(0.1	(0.1	(0.1	10.3
PA-4	8'-9'	10/10/87	8:58 am	0.98	(0.1	(0.1	(0.1	10.3
PA-4	9'-10'	10/10/87	9:01 am	0.86	(0.1	(0.1	(0.1	10.1
SP-Z.3	0'-2'	10/10/87	9:47 am	3.3	(1	1.3	3.0	27.8
SP-Z.3	2'-4'	10/10/87	9:54 am	55	(1	16	130	44.5
SP-Z.3	4'-6'	10/10/87	9:58 am	7.4	0.16	6.1	37	26.6
SP-Z.3	6'-8'	10/10/87	10:03 am	(0.05	(0.1	0.17	1.5	14.1
SP-Z.3	8'-10'	10/10/87	10:12 am	(0.05	(0.1	(0.1	0.25	12.7
SP-Z.3	10'-12'	10/10/87	10:13 am	(0.05	(0.1	(0.1	0.33	12.1
SP-Z.3	12'-14'	10/10/87	10:25 am	0.22	(0.1	0.11	(0.1	13.8
SP-Z.3	14'-16'	10/10/87	10:33 am	(0.05	(0.1	(0.1	(0.1	12.9
SP-Z.3	16'-18'	10/10/87	10:40 am	(0.05	(0.1	(0.1	0.21	11.2
SP-Z.3	18'-20'	10/10/87	11:50 am	(0.05	(0.1	(0.1	0.25	10.3
SP-Z.3	20'-22'	10/10/87	11:58 am	(0.05	(0.1	(0.1	0.28	12.6
SP-Z.3	22'-24'	10/10/87	12:08 pm	(0.05	(0.1	(0.1	(0.1	11.4
SP-Z.3	24'-25'	10/10/87	12:17 pm	(0.05	(0.1	(0.1	(0.1	11.6
SP-Z.3	26'-28'	10/10/87	12:25 pm	(0.05	(0.1	(0.1	(0.1	10.9
SP-Z.3	28'-30'	10/10/87	12:40 pm	(0.05	(0.1	(0.1	(0.1	10.4
BG-1	0'-2'	10/11/87	8:25 am	(0.05	(0.1	(0.1	(0.1	11.1
BG-1	2'-4'	10/11/87	8:29 am	(0.05	(0.1	(0.1	(0.1	11.4
BG-1	4'-6'	10/11/87	8:33 am	(0.05	(0.1	(0.1	(0.1	11.0
BG-1	6'-8'	10/11/87	8:39 am	(0.05	(0.1	(0.1	(0.1	9.53
BG-1	8'-10'	10/11/87	8:45 am	(0.05	(0.1	(0.1	(0.1	12.5
BG-1	10'-12'	10/11/87	8:52 am	(0.05	(0.1	(0.1	(0.1	10.2
BG-1	12'-14'	10/11/87	9:13 am	(0.05	(0.1	(0.1	(0.1	15.1
BG-1	14'-16'	10/11/87	9:23 am	(0.05	(0.1	(0.1	(0.1	17.0
BG-1	16'-18'	10/11/87	9:32 am	(0.05	(0.1	(0.1	(0.1	14.7
BG-1	18'-20'	10/11/87	9:43 am	(0.05	(0.1	0.11	(0.1	12.5
BG-1	20'-22'	10/11/87	10:20 am	(0.05	(0.1	(0.1	(0.1	16.9
BG-1	22'-24'	10/11/87	10:30 am	(0.05	(0.1	0.12	(0.1	15.5
BG-1	24'-25'	10/11/87	10:42 am	(0.05	(0.1	(0.1	(0.1	14.0
BG-1	26'-28'	10/11/87	11:09 am	(0.05	(0.1	(0.1	(0.1	17.0
BG-1	28'-30'	10/11/87	11:15 am	(0.05	(0.1	(0.1	(0.1	15.8

November 24, 1987

SAMPLE KEY

Mr. Jerry Overton
B & F Engineering, Inc.
Hot Springs, Arkansas

American Interplex Corporation
Control No. 13000

Sample No. 1: Composite of SP 2.1, 0-1', 10/8/87, 9:20 a.m. and SP 2.1, 1'-2', 10/8/87, 9:27 a.m.

Sample No. 2: Composite of SP 2.1, 2'-3', 10/8/87, 9:28 a.m. and SP 2.1, 3'-4', 10/8/87, 9:35 a.m.

Sample No. 3: Composite of SP 2.1, 4'-5', 10/8/87, 9:38 a.m. and SP 2.1, 5'-6', 10/8/87, 9:43 a.m.

Sample No. 4: Composite of SP 2.1, 6'-7', 10/8/87, 9:51 a.m. and SP 2.1, 7'-8', 10/8/87, 9:53 a.m.

Sample No. 5: Composite of SP 2.1, 8'-9', 10/8/87, 10:00 a.m. and SP 2.1, 9'-10', 10/8/87, 10:21 a.m.

Sample No. 6: Composite of SP 2.1, 10'-11', 10/8/87, 10:40 a.m. and SP 2.1, 11'-12', 10/8/87, 10:45 a.m.

Sample No. 7: Composite of SP 2.1, 12'-13', 10/8/87, 10:46 a.m. and SP 2.1, 13'-14', 10/8/87, 10:55 a.m.

Sample No. 8: Composite of SP 2.1, 14'-15', 10/8/87, 11:01 a.m. and SP 2.1, 15'-16', 10/8/87, 11:13 a.m.

Sample No. 9: Composite of SP 2.1, 16'-17', 10/8/87, 11:19 a.m. and SP 2.1, 17'-18', 10/8/87, 11:27 a.m.

Sample No. 10: Composite of SP 2.1, 18'-19', 10/8/87, 12:50 p.m. and SP 2.1, 19'-20', 10/8/87, 1:01 p.m.

Sample No. 11: Composite of SP 2.1, 20'-21', 10/8/87, 1:05 p.m. and SP 2.1, 21'-22', 10/8/87, 1:26 p.m.

Sample No. 12: Composite of SP 2.1, 22'-23', 10/8/87, 1:32 p.m. and SP 2.1, 23'-24', 10/8/87, 1:40 p.m.

Sample No. 13: Composite of SP 2.1, 24'-25', 10/8/87, 2:04 p.m. and SP 2.1, 25'-26', 10/8/87, 2:15 p.m.

Sample No. 14: Composite of SP 2.1, 26'-27', 10/8/87, 2:25 p.m. and SP 2.1, 27'-28', 10/8/87, 2:32 p.m.

Sample No. 15: Composite of SP 2.1, 28'-29', 10/8/87, 3:10 p.m. and SP 2.1, 29'-30', 10/8/87, 3:16 p.m.

November 24, 1987

DATA SHEET

Mr. Jerry Overton
B & F Engineering, Inc.
Hot Springs, Arkansas

American Interplex Corporation
Control No. 13000

	EP-TOXICITY			
Sample Number	PCP ppm	Acenaphthalene ppm	Naphthalene ppm	Fluoranthene ppm
#1	0.26	<0.005	<0.005	<0.005
#2	0.91	<0.005	<0.005	<0.005
#3	0.092	<0.005	<0.005	<0.005
#4	0.14	0.0098	<0.005	<0.005
#5	1.6	0.034	<0.005	0.016
#6	0.037	0.043	0.0091	<0.005
#7	0.051	<0.005	<0.005	<0.005
#8	0.0085	<0.005	<0.005	<0.005
#9	0.0051	<0.005	<0.005	<0.005
#10	0.029	<0.005	<0.005	<0.005
#11	<0.001	<0.005	<0.005	<0.005
#12	<0.001	<0.005	<0.005	<0.005
#13	<0.001	<0.005	<0.005	<0.005
#14	0.076	0.0098	<0.005	<0.005
#15	0.0042	<0.005	<0.005	<0.005

Note: See attached for Sample Key.

JAN 11 1988

AMERICAN INTERPLEX CORPORATION
3400 Asher Avenue
Little Rock, AR 72204
(501) 664-5060

B & F Engineering Company (C-25)
928 Airport Road
Hot Springs, AR 71913

January 6, 1988

ATTN: Mr. Jerry Overton

Control No. 13267

Description of Sample: Thirty-six (36) Soil samples received on 10/29/87. Reference Thomason Lumber Company, Broken Bow, OK. No. 7-2397-0101

Results:

Station No.	Station Location	Date	Time	PCP, ppm	Naphthalene, ppm	Acenaphthalene, ppm	Fluoranthene, ppm	Moisture, %
PA-7	0'-1'	10/28/87	7:45 am	0.76	<1	<1	3.3	4.86
PA-7	1'-2'	10/28/87	7:50 am	<0.05	<0.1	<0.1	<0.1	17.8
PA-8	0-1	10/26/87	2:20 pm	53,47	<1,<1	<1,<1	26,25	7.13
PA-8	1-2	10/26/87	2:28 pm	<0.05	<0.1	<0.1	<0.1	13.7
PA-9	0-1	10/26/87	3:30 pm	62	<1	<1	76	7.61
PA-9	1-2	10/26/87	3:05 pm	<0.05	<0.1	<0.1	0.15	7.97
PA-9	2-3	10/26/87	3:08 pm	<0.05	<0.1	<0.1	<0.1	11.6
PA-10	0-1	10/26/87	3:33 pm	63	<1	<1	79	8.44
PA-10	1-2	10/26/87	3:37 pm	2.2,3.2	<1,<1	<1,<1	18,29	9.94
PA-6	0'-1'	10/27/87	12:08 pm	0.20,0.18	<0.1	<0.1	0.50	11.1
PA-6	1'-2'	10/27/87	12:13 pm	<0.05	<0.1	<0.1	<0.1	5.48
PA-13	0'-1'	10/28/87	8:45 am	42	<1	<1	51	11.0
PA-13	1'-2'	10/28/87	8:48 am	<0.05	<1	<1	4.7	16.2
PA-13	2'-3'	10/28/87	8:53 am	<0.05	<1	<1	1.8	10.2
PA-11	0'-1'	10/27/87	9:18 am	4.8	<1	<1	20	9.37
PA-11	1'-2'	10/27/87	9:25 am	0.43	<1	<1	4.8	10.6
PA-11	2'-3'	10/27/87	9:30 am	<0.05	<1	<1	3.0	8.62
PA-11	3'-4'	10/27/87	9:37 am	<0.05	<1	<1	1.8	9.99
PA-12	0'-1'	10/27/87	10:12 am	64	<1	<1	180	4.18
PA-12	1'-2'	10/27/87	10:32 am	0.068	<1	<1	4.3	6.62
PA-12	2'-3'	10/27/87	10:38 am	<0.05	<1	<1	4.7	14.1
PA-12	3'-4'	10/27/87	10:45 am	<0.05	<1	<1	1.6	7.87
	Spike Recovery 1			99.2% @0.25 ppm	84.9% @0.5 ppm	91.6% @0.5 ppm	89.1% @0.5 ppm	
	Spike Recovery 2			106% @0.25 ppm	86.3% @0.5 ppm	93.4% @0.5 ppm	90.8% @0.5 ppm	

Method: EPA 3550, 8040, 8010

Remarks: Results are based on a dry weight basis. All other samples not analyzed as requested.
cc: Mr. Earl Hayes
Thomason Lumber Company

AMERICAN INTERPLEX CORPORATION

By _____
Lydia Norton, Lab Director

JAN 11

B & F Engineering Company
January 5, 1988

Control NO. 13114
(Page 2 of 2 Pages)

Station No.	Station Location	Date	Time	PCP, ppm	Naphthalene, ppm	Acenaphthalene, ppm	Fluoranthene, ppm	Moisture, %
BG-3	0'-1'	10/15/87	12:38 pm	1.7	1.6	0.94	1.0	1.85
BG-3	1'-2'	10/15/87	12:44 pm	0.16	(0.1	(0.1	0.22	4.08
BG-3	2'-3'	10/15/87	1:50 pm	(0.05	(0.1	(0.1	0.16	5.57
BG-3	3'-4'	10/15/87	1:55 pm	(0.05	(0.1	(0.1	0.22	7.45
BG-3	4'-5'	10/15/87	1:58 pm	(0.05	(0.1	(0.1	0.14	8.32
BG-3	5'-6'	10/15/87	2:02 pm	(0.05	(0.1	(0.1	0.14	7.48
BG-4	0'-1'	10/15/87	2:15 pm	1.3	(0.1	(0.1	0.85	1.34
BG-4	1'-2'	10/15/87	2:17 pm	0.092	(0.1	(0.1	0.12	4.08
BG-4	2'-3'	10/15/87	2:22 pm	(0.05	(0.1	(0.1	0.13	10.3
BG-4	3'-4'	10/15/87	2:28 pm	0.054	(0.1	(0.1	(0.1	6.33
BG-5	0'-1'	10/16/87	7:45 am	0.060	(0.1	(0.1	(0.1	3.74
BG-5	1'-2'	10/16/87	7:52 am	0.064	(0.1	(0.1	(0.1	6.21
GB-5	2'-3'	10/16/87	7:56 am	(0.05	(0.1	(0.1	(0.1	17.4
GB-5	3'-4'	10/16/87	8:00 am	(0.05, (0.05	(0.1, (0.1	(0.1, (0.1	(0.1, (0.1	16.9
PA-3	0'-1'	10/16/87	8:53 am	38	(0.1	(0.1	1.7	7.98
PA-3	1'-2'	10/16/87	8:58 am	0.055	(0.1	(0.1	0.15	18.1
PA-3	2'-3'	10/16/87	9:03 am	(0.05	(0.1	(0.1	(0.1	18.6
	Spike Recovery			92.5% @0.25 ppm	86.5% @0.5 ppm	88.2% @0.5 ppm	87.7% @0.5 ppm	
				106% @0.25 ppm	91.3% @0.5 ppm	93.1% @0.5 ppm	91/8% @0.5 ppm	
				91.1% @0.25 ppm	86.3% @0.5 ppm	87.7% @0.5 ppm	88.8% @0.5 ppm	
				90.8% @0.25 ppm	82.2% @0.5 ppm	83.8% @0.5 ppm	84.6% @0.5 ppm	

Method: EPA 3550, 8040, 8010

Remarks: Results are based on a dry weight basis. All other samples not analyzed as requested.

cc: Mr. Earl Hayes
Thomason Lumber Company

AMERICAN INTERPLEX CORPORATION

By _____
Lydia Norton, Lab Director

JAN 11 1988

AMERICAN INTERPLEX CORPORATION
3400 Asher Avenue
Little Rock, AR 72204
(501) 664-5060

B & F Engineering Company (C-25)
928 Airport Road
Hot Springs, AR 71913

January 5, 1988

ATTN: Mr. Jerry Overton

Control No. 13114
(Page 1 of 2 Pages)

Description of Sample: Sixty-two (62) Soil samples received on 10/19/87. Reference Thomason Lumber Company, Broken Bow, OK. No. 7-2397-0101

Results:

Station No.	Station Location	Date	Time	PCP, ppm	Naphthalene, ppm	Acenaphthalene, ppm	Fluoranthene, ppm	Moisture, %
PA-1	0-1	10/13/87	1:37 pm	<0.05	<0.1	0.13	0.11	12.3
PA-1	1-2	10/13/87	1:40 pm	<0.05	<0.1	<0.1	<0.1	14.6
SP 1.1	20'-22'	10/13/87	9:51 am	0.15	<0.1	<0.1	<0.1	15.3
SP 1.1	22'-24'	10/13/87	9:58 am	0.57	<0.1	<0.1	1.9	19.8
SP 1.1	24'-26'	10/13/87	10:30 am	0.094	<0.1	<0.1	0.14	17.1
SP 1.1	26'-28'	10/13/87	10:36 am	3.0	<0.1	<0.1	0.53	17.4
SP 1.1	28'-30'	10/13/87	10:47 am	0.075	<0.1	<0.1	<0.1	17.0
SP 1.2	0-2	10/14/87	7:55 am	8.7	<0.1	<0.1	0.19	6.64
SP 1.2	2-4	10/14/87	8:00 am	50	1.1	<0.1	50	13.2
SP 1.2	4-6	10/14/87	8:05 am	26	0.61	<1	20	12.8
SP 1.2	6-8	10/14/87	8:08 am	5.1	<0.1	<0.1	3.2	11.8
SP 1.2	8-10	10/14/87	8:18 am	8.8	<0.1	<0.1	6.1	9.95
SP 1.2	10-12	10/14/87	8:22 am	7.6	<0.1	<0.1	5.1	10.5
SP 1.2	12-14	10/14/87	8:27 am	0.84	<0.1	<0.1	0.47	10.1
SP 1.2	14-16	10/14/87	8:40 am	46	2.7	<1	36	10.2
SP 1.2	16-18	10/14/87	8:43 am	15	0.64	<0.1	12	10.4
SP 1.2	18-20	10/14/87	9:04 am	4.4	<0.1	<0.1	5.4	10.4
SP 1.2	20-22	10/14/87	9:12 am	32	17	<1	35	11.7
SP 1.2	22-24	10/14/87	9:28 am	390	89	<1	370	11.7
SP 1.2	24-26	10/14/87	9:35 am	2.7	<0.1	<0.1	1.5	7.76
SP 1.2	26-28	10/14/87	10:04 am	5.5	<0.1	<0.1	14	9.22
SP 1.2	28-30	10/14/87	10:10 am	10	<1	<0.1	24	17.8

OKD007333529

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B&F ENGINEERING, INC.
928 Airport Road • Hot Springs National Park, Arkansas 71913 • (501) 767-2366

March 15, 1991

U.S. Environmental Protection Agency
1445 Ross Avenue
Suite 1200 (6H-CS)
Dallas, Texas 75202-2733

ATTN: Mr. Gary Miller

RE: Thomason Lumber & Timber Co.
B&F Job No. 7-2397-0101

Dear Mr. Miller:

The sixth and final ground-water sampling event for this portion of the site characterization was completed on February 14, 1991. Enclosed are the potentiometric surface contour maps and the chemical analytical data for this event.

If you have any questions regarding these matters, please do not hesitate to contact us.

Thank you.

Sincerely,

B & F ENGINEERING, INC.

Peter W. Bayley
Project Hydrogeologist

PWB/ss

Enclosure

FEB 22 1991

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Thomason Lumber and Timber Company (C-537)
Post Office Drawer 278
Broken Bow, OK 74738

February 21, 1991

ATTN: Mr. Earl Hayes

Control No. 732

Description of Sample: Nine (9) water samples collected by B & F Engineering personnel received on 2/13/91; Re: 7-2397-0101

Results:

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
910212-2D, 2/12/91, 1520	0.0049	<0.01	<0.01	<0.01
910212-2D-2, 2/12/91, 1530	0.0045	0.018	<0.01	<0.01
910212-2E, 2/12/91, 1540	<0.001	<0.01	<0.01	<0.01
910212-4G, 2/12/91, 1600	<0.001	<0.01	<0.01	<0.01
910212-5D, 2/12/91, 1620	0.0030	0.11	<0.01	<0.01
910212-5D-1, 2/12/91, 1640	0.0035	0.27	<0.01	<0.01
910212-6C, 2/12/91, 1700	0.13	0.30	<0.01	0.013
910212-6C-1, 2/12/91, 0845	<0.001	<0.01	<0.01	<0.01
910212-6C-2, 2/12/91, 1500	<0.001	<0.01	<0.01	<0.01

Method: EPA 3510, 8040, 8100

Remarks: Chain of custody returned to B & F Engineering, Inc.

cc: B & F Engineering, Inc.
ATTN: Mr. Peter Bayley
928 Airport Road
Hot Springs, AR 71913-4697

AMERICAN INTERPLEX CORPORATION

By Steven Lovell

Steven Lovell
Laboratory Director

SL/bp

FEB 23 1991

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Thomason Lumber and Timber Company (C-537)
Post Office Drawer 278
Broken Bow, OK 74738

February 22, 1991

ATTN: Mr. Earl Hayes

Control No. 801

Description of Sample: Twelve (12) water samples collected by B & F Engineering personnel received on 2/18/91; Re: 7-2397-0101

Results:

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
910213-2A, 2/13/91, 1550	<0.001	<0.01	<0.01	<0.01
910213-2A-1, 2/13/91, 1605	<0.001	<0.01	<0.01	<0.01
910213-1A, 2/13/91, 1620	<0.001	<0.01	<0.01	<0.01
910213-1A-1, 2/13/91, 1630	<0.001	<0.01	<0.01	<0.01
910213-1D, 2/13/91, 1640	<0.001	<0.01	<0.01	<0.01
910213-1CD, 2/13/91, 1655	<0.001	<0.01	0.024	<0.01
*910212-2D-1, 2/12/91, 0825	<0.001	<0.01	<0.01	<0.01
910214-4A, 2/14/91, 1505	<0.001	<0.01	<0.01	<0.01
910214-4D, 2/14/91, 1525	0.0013	<0.01	<0.01	<0.01
910214-5A, 2/14/91, 1600	<0.001	<0.01	<0.01	<0.01
910214-5C, 2/14/91, 1615	<0.001	<0.01	<0.01	<0.01
910214-6A, 2/14/91, 1640	<0.001	<0.01	<0.01	<0.01

Method: EPA 3510, 8040, 8100

Remarks: Chain of custody returned to B & F Engineering, Inc.
*Identity on chain of custody was 910212-2D-2

cc: B & F Engineering, Inc.
ATTN: Mr. Peter Bayley
928 Airport Road
Hot Springs, AR 71913-4697

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Laboratory Director

SL/bp

THOMASON LUMBER & TIMBER COMPANY

FEBRUARY 12-14, 1991 GROUND-WATER SAMPLING

SAMPLE	LOCATION
910213-1A	MW-1A
910213-1A-1	MW-1A FIELD BLANK
910213-1CD	MW-1CD
910213-1D	MW-1D
910213-2A	MW-2A
910213-2A-1	MW-2A FIELD BLANK
910212-2D	MW-2D
910212-2D-2	MW-2D DUPLICATE OF MW-2D
910212-2E	MW-2E
910214-4A	MW-4A
910214-4D	MW-4D
910212-4G	MW-4G
910214-5A	MW-5A
910214-5C	MW-5C
910212-5D	MW-5D
910212-5D-1	MW-5D DUPLICATE OF MW-5D
910214-6A	MW-6A
910212-6C	MW-6C
910212-6C-1	MW-6C BAILER BLANK
910212-6C-2	MC-6C WIRELINE BLANK AFTER USE @ 6C
910212-2D-1	TRIP BLANK

OKD007335524

III .2

B&F ENGINEERING, INC.

928 Airport Road • Hot Springs National Park, Arkansas 71913
Phone: 501-767-2366 • FAX: 501-767-6859

July 23, 1990

U.S. Environmental Protection Agency
1445 Ross Ave.
Suite 1200 (6H-CS)
Dallas, Texas 75202-2733

ATTN: Mr. Mike Bira

RE: Thomason Lumber & Timber Co.
B&F Job No. 7-2397-0101

Dear Mr. Bira:

The second of six (6) ground-water sampling events was conducted June 19-21, 1990. Enclosed please find the laboratory analytical results and ground-water contour maps for this event.

Complete documentation for this event will be provided in the ground-water quality report to be submitted in May, 1991.

Sincerely,

B & F ENGINEERING, INC.

Peter W. Bayley
Project Hydrogeologist

CC: Chris Varga OSDH

Enclosure

JUL 05 1990

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Thomason Lumber and Timber Company (C-537)
Post Office Drawer 278
Broken Bow, OK 74738

July 3, 1990

ATTN: Mr. Earl Hayes

Control No. 26799A

Description of Sample: Sixteen (16) water samples collected by B & F Engineering personnel and received on 6/21/90

Results:

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
900619-6C-3, 6/19/90, 0730	<0.001	<0.01	<0.01	<0.01
900619-6A, 6/19/90, 1700	<0.001	<0.01	<0.01	<0.01
900619-6C, 6/19/90, 1730	0.0050	<0.01	<0.01	<0.01
900619-6C-1, 6/19/90, 1400	<0.001	<0.01	<0.01	<0.01
900619-6C-2, 6/19/90, 1745	<0.001	<0.01	<0.01	<0.01
900620-2A, 6/20/90, 1700	<0.001	<0.01	<0.01	<0.01
900620-2D, 6/20/90, 1715	0.0042	<0.01	<0.01	<0.01
900620-2D-1, 6/20/90, 1720	0.0039	<0.01	<0.01	<0.01
900620-2E, 6/20/90, 1735	<0.001	<0.01	<0.01	<0.01
900620-2E-1, 6/20/90, 1740	<0.001	<0.01	<0.01	<0.01
900620-4G, 6/20/90, 1755	<0.001	<0.01	<0.01	<0.01
900620-4D, 6/20/90, 1800	<0.001	<0.01	<0.01	<0.01
900620-4D-1, 6/20/90, 1805	0.0026	<0.01	<0.01	<0.01
900620-5A, 6/20/90, 1820	<0.001	<0.01	<0.01	<0.01
900620-5C, 6/20/90, 1835	<0.001	<0.01	<0.01	<0.01
900620-5D, 6/20/90, 1850	0.0049	0.031	<0.01	0.016

Method: EPA 8040, 8100

Remarks: Chain of custody returned to B & F Engineering, Inc.

cc: B & F Engineering, Inc.
ATTN: Mr. Peter Bayley
928 Airport Road
Hot Springs, AR 71913-4697

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Laboratory Director

SL/bp

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

JUL 05 1990

Thomason Lumber and Timber Company (C-537)
Post Office Drawer 278
Broken Bow, OK 74738

July 3, 1990

ATTN: Mr. Earl Hayes

Control No. 26819

Description of Sample: Six (6) water samples collected by B & F Engineering personnel and received on 6/22/90

Results:

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
900621-1A, 6/21/90, 1120	<0.001	<0.01	<0.01	<0.01
900621-1CD, 6/21/90, 1135	<0.001	<0.01	<0.01	<0.01
900621-1CD-1, 6/21/90, 1140	<0.001	<0.01	<0.01	<0.01
900621-1D, 6/21/90, 1155	<0.001	<0.01	<0.01	<0.01
900621-4A, 6/21/90, 1230	<0.001	<0.01	<0.01	<0.01
Trip Blank, 6/21/90, 1300	<0.001	<0.01	<0.01	<0.01

Method: EPA 8040, 8100

Remarks: Chain of custody returned to B & F Engineering, Inc.

cc: B & F Engineering, Inc.
ATTN: Mr. Peter Bayley
928 Airport Road
Hot Springs, AR 71913-4697

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Laboratory Director

SL/bp

OKD007335524

I.2

B&F ENGINEERING, INC.
928 Airport Road • Hot Springs National Park, Arkansas 71913 • (501) 767-2366

January 23, 1991

U.S. Environmental Protection Agency
1445 Ross Ave.
Suite 1200 (6H-CS)
Dallas, Texas 75202-2733

ATTN: Mr. Gary Miller

RE: Thomason Lumber & Timber Co.
B&F Job No. 7-2397-0101

Dear Mr. Miller:

The fifth of six (6) ground-water sampling events was conducted December 18-20, 1990. Enclosed are the laboratory analytical results, and ground-water contour maps for this event.

Complete documentation for these events will be provided in the ground-water quality report to be submitted in May, 1991.

Please do not hesitate to call if there are any questions regarding the enclosed material.

Sincerely,

B & F ENGINEERING, INC.

Peter W. Bayley,
Project Hydrogeologist

Enclosure

THOMASON LUMBER & TIMBER COMPANY

DECEMBER 18-20, 1990 GROUND-WATER SAMPLING

SAMPLE	LOCATION
901218-1A	MW-1A
901218-1A-1	MW-1A FIELD BLANK
901218-1CD	MW-1CD
901218-1D	MW-1D
901219-2A	MW-2A
901219-2A-1	MW-2A FIELD BLANK
901218-2D	MW-2D
901218-2D-1	MW-2D DUPLICATE OF MW-2D
901218-2E	MW-2E
901219-4A	MW-4A
901218-4D	MW-4D
901218-4D-1	MW-4D DUPLICATE OF MW-4D
901218-4G	MW-4G
901220-5A	MW-5A
901218-5C	MW-5C
901218-5D	MW-5D
901220-6A	MW-6A
901220-6C	MW-6C
901218-6C-1	MW-6C BAILER BLANK
901218-6C-2	MC-6C WIRELINE BLANK AFTER USE @ 6C
901220 TRIP BLANK	TRIP BLANK

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Mr. Earl Hayes
Thomason Lumber and Timber Company
Broken Bow, Oklahoma

January 2, 1991
Control No. 29786
Data Sheet

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
901218-1A, 12/18/90, 1540	<0.001	<0.01	<0.01	<0.01
901218-1A-1, 12/18/90, 1550	<0.001	<0.01	<0.01	<0.01
901218-1CD, 12/18, 1500	<0.001	<0.01	<0.01	<0.01
901218-1D, 12/18, 1515	<0.001	<0.01	<0.01	<0.01
901218-4D, 12/18, 1600	0.0015	<0.01	<0.01	<0.01
901218-4D-1, 12/18, 1605	0.0015	<0.01	<0.01	<0.01
901218-4G, 12/18, 1610	<0.001	<0.01	<0.01	<0.01
901218-2D, 12/18, 1630	0.0050	<0.01	<0.01	0.014
901218-2D-1, 12/18, 1625	0.0044	<0.01	<0.01	0.015
901218-2E, 12/18/90, 1640	<0.001	<0.01	<0.01	<0.01
901218-5C, 12/18/90, 1700	<0.001	<0.01	<0.01	<0.01
901218-6C-1, 12/18/90, 1520	<0.001	<0.01	<0.01	<0.01
901218-6C-2, 12/18/90, 1530	<0.001	<0.01	<0.01	<0.01
901218-5D, 12/18/90, 1710	0.0050	<0.01	<0.01	0.36

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Thomason Lumber and Timber Company (C-537)
Post Office Drawer 278
Broken Bow, OK 74738

January 8, 1991

ATTN: Mr. Earl Hayes

Control No. 29828

Description of Sample: Seven (7) water samples collected by B & F Engineering personnel received on 12/21/90; Re: 7-2397-0101

JAN - 9 1991

Results:

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
901219-2A, 12/19/90, 1650	<0.001	<0.01	<0.01	<0.01
901219-2A-1, 12/19/90, 1700	<0.001	<0.01	<0.01	<0.01
901219-4A, 12/19/90, 1720	<0.001	<0.01	<0.01	<0.01
901220-5A, 12/20/90, 1000	<0.001	<0.01	<0.01	<0.01
901220-6A, 12/20/90, 1135	<0.001	<0.01	<0.01	<0.01
901220-6C, 12/20/90, 1220	0.30	<0.02*	<0.02*	<0.02*
901220-TRIP BLANK, 12/20 1300	<0.001	<0.01	<0.01	<0.01

Method: EPA 604, 610

Remarks: Chain of custody returned to B & F Engineering, Inc.
*Elevated detection limits due to interference.

cc: B & F Engineering, Inc.
ATTN: Mr. Peter Bayley
928 Airport Road
Hot Springs, AR 71913-4697

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Laboratory Director

SL/bp

ARD000733524
III.1

B&F ENGINEERING, INC.
928 Airport Road • Hot Springs National Park, Arkansas 71913 • (501) 767-2366

November 16, 1990

U.S. Environmental Protection Agency
1445 Ross Ave.
Suite 1200 (6H-CS)
Dallas, Texas 75202-2733

ATTN: Mr. Gary Miller

RE: Thomason Lumber & Timber Co.
B&F Job No. 7-2397-0101

Dear Mr. Miller:

The fourth of six (6) ground-water sampling events was conducted October 17-19, 1990. Enclosed are the laboratory analytical results and ground-water contour maps for this event.

Complete documentation for these events will be provided in the ground-water quality report to be submitted in May, 1991.

Please do not hesitate to call if there are any questions regarding the enclosed material.

Sincerely,

B & F ENGINEERING, INC.

Peter W. Bayley
Project Hydrogeologist

Enclosure

THOMASON LUMBER & TIMBER COMPANY

OCTOBER 17-19, 1990 GROUND-WATER SAMPLING

SAMPLE	LOCATION
901018-1A	MW-1A
901018-1CD	MW-1C
901018-1CD-1	MW-1C FIELD BLANK
901017-1D	MW-1D
901018-2A	MW-2A
901018-2A-1	MW-2A FIELD BLANK
901017-2D	MW-2D
901017-2E	MW-2E
901018-4A	MW-4A
901018-4D	MW-4D
901018-4D-1	MW-4D DUPLICATE @ 4D
901017-4G	MW-4G
901018-5A	MW-5A
901019-5C	MW-5C
901019-5C-1	MW-5C DUPLICATE @ 5C
901019-5D	MW-5D
901019-6A	MW-6A
901017-6C	MW-6C
901017-6C-1	MW-6C WIRELINE BLANK AFTER USE @ 6C
901017-6C-2	MW-6C BAILER BLANK
901017-6C-3	MW-6C WIRELINE BLANK (PRIOR TO INITIAL USE)
TB	TRIP BLANK

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Mr. Earl Hayes
Thomason Lumber and Timber Company
Broken Bow, Oklahoma

October 26, 1990
Control No. 28817
Data Sheet

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
901018-1CD-1, 10/18/90 0910	<0.001	<0.01	<0.01	<0.01
901018-1CD, 10/18/90 0915	<0.001	<0.01	<0.01	<0.01
901018-1A, 10/18/90 1000	<0.001	<0.01	<0.01	<0.01
901018-4D, 10/18/90 1150	0.0042	<0.01	<0.01	<0.01
901018-4D-1, 10/18/90 1210	0.0020	<0.01	<0.01	<0.01
Trip Blank, 10/18/90 1330	<0.001	<0.01	<0.01	<0.01
901018-4A, 10/18/90 1500	<0.001	<0.01	<0.01	<0.01
901018-2A, 10/18/90 1530	<0.001	<0.01	<0.01	<0.01
901018-2A-1, 10/18/90 1550	<0.001	<0.01	<0.01	<0.01
901019-5A, 10/19/90, 1100	<0.001	<0.01	<0.01	<0.01
901019-5C, 10/19/90 1140	<0.001	<0.01	<0.01	<0.01
901019-5C-1, 10/19/90 1150	<0.001	<0.01	<0.01	<0.01
901019-5D, 10/19/90 1250	0.0082	<0.01	<0.01	0.27
901019-6A, 10/19/90 1400	<0.001	<0.01	<0.01	<0.01

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Mr. Earl Hayes
Thomason Lumber and Timber Company
Broken Bow, Oklahoma

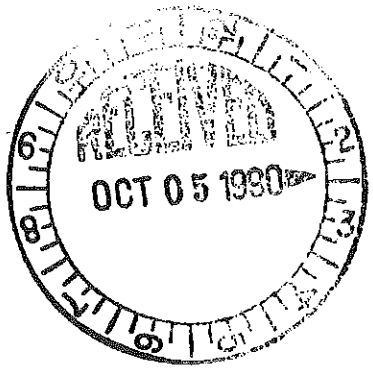
October 25, 1990
Control No. 28783
Data Sheet

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
901017-6C3, 10/17/90 1000	<0.001	<0.01	<0.01	<0.01
901017-4G, 10/17/90 1800	<0.001	<0.01	<0.01	<0.01
901017-1D, 10/17/90 1820	<0.001	<0.01	<0.01	<0.01
901017-2D, 10/17/90 1840	0.0031	<0.01	<0.01	0.013
901017-2E, 10/17/90 1900	<0.001	<0.01	<0.01	<0.01
901017-6C, 10/17/90 1920	0.021	<0.01	<0.01	0.073
901017-6C2, 10/17/90 1935	<0.001	<0.01	<0.01	<0.01
901017-6C1, 10/17/90 1950	<0.001	<0.01	<0.01	<0.01

OKD007335524 III, 2

B&F ENGINEERING, INC.
928 Airport Road • Hot Springs National Park, Arkansas 71913 • (501) 767-2366

October 3, 1990



U.S. Environmental Protection Agency
1445 Ross Ave.
Suite 1200 (6H-CS)
Dallas, Texas 75202-2733

ATTN: Mr. Gary Miller

RE: Thomason Lumber & Timber Co.
B&F Job No. 7-2397-0101

Dear Mr. Miller:

The third of six (6) ground-water sampling events was conducted August 21-23, 1990. Enclosed are the laboratory analytical results and ground-water contour maps for this event.

As requested by you, a second copy of the data set for the ground-water sampling event conducted June 19-21, 1990 has also been included in this package.

Complete documentation for these events will be provided in the ground-water quality report to be submitted in May, 1991.

Please do not hesitate to call if there are any questions regarding the enclosed material.

Sincerely,

B & F ENGINEERING, INC.

Peter W. Bayley
Project Hydrogeologist

Enclosure

JUL 05 1990

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

Thomason Lumber and Timber Company (C-537)
Post Office Drawer 278
Broken Bow, OK 74738

July 3, 1990

ATTN: Mr. Earl Hayes

Control No. 26799A

Description of Sample: Sixteen (16) water samples collected by B & F Engineering personnel and received on 6/21/90

Results:

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
900619-6C-3, 6/19/90, 0730	<0.001	<0.01	<0.01	<0.01
900619-6A, 6/19/90, 1700	<0.001	<0.01	<0.01	<0.01
900619-6C, 6/19/90, 1730	0.0050	<0.01	<0.01	<0.01
900619-6C-1, 6/19/90, 1400	<0.001	<0.01	<0.01	<0.01
900619-6C-2, 6/19/90, 1745	<0.001	<0.01	<0.01	<0.01
900620-2A, 6/20/90, 1700	<0.001	<0.01	<0.01	<0.01
900620-2D, 6/20/90, 1715	0.0042	<0.01	<0.01	<0.01
900620-2D-1, 6/20/90, 1720	0.0039	<0.01	<0.01	<0.01
900620-2E, 6/20/90, 1735	<0.001	<0.01	<0.01	<0.01
900620-2E-1, 6/20/90, 1740	<0.001	<0.01	<0.01	<0.01
900620-4G, 6/20/90, 1755	<0.001	<0.01	<0.01	<0.01
900620-4D, 6/20/90, 1800	<0.001	<0.01	<0.01	<0.01
900620-4D-1, 6/20/90, 1805	0.0026	<0.01	<0.01	<0.01
900620-5A, 6/20/90, 1820	<0.001	<0.01	<0.01	<0.01
900620-5C, 6/20/90, 1835	<0.001	<0.01	<0.01	<0.01
900620-5D, 6/20/90, 1850	0.0049	0.031	<0.01	0.016

Method: EPA 8040, 8100

Remarks: Chain of custody returned to B & F Engineering, Inc.

cc: B & F Engineering, Inc.
ATTN: Mr. Peter Bayley
928 Airport Road
Hot Springs, AR 71913-4697

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Laboratory Director

SL/bp

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, Arkansas 72204
(501) 224-5060

JUL 05 1990

Thomason Lumber and Timber Company (C-537)
Post Office Drawer 278
Broken Bow, OK 74738

July 3, 1990

ATTN: Mr. Earl Hayes

Control No. 26819

Description of Sample: Six (6) water samples collected by B & F Engineering personnel and received on 6/22/90

Results:

Sample Identification	PCP mg/l	Acenaphthylene mg/l	Fluoranthene mg/l	Napthalene mg/l
900621-1A, 6/21/90, 1120	<0.001	<0.01	<0.01	<0.01
900621-1CD, 6/21/90, 1135	<0.001	<0.01	<0.01	<0.01
900621-1CD-1, 6/21/90, 1140	<0.001	<0.01	<0.01	<0.01
900621-1D, 6/21/90, 1155	<0.001	<0.01	<0.01	<0.01
900621-4A, 6/21/90, 1230	<0.001	<0.01	<0.01	<0.01
Trip Blank, 6/21/90, 1300	<0.001	<0.01	<0.01	<0.01

Method: EPA 8040, 8100

Remarks: Chain of custody returned to B & F Engineering, Inc.

cc: B & F Engineering, Inc.
ATTN: Mr. Peter Bayley
928 Airport Road
Hot Springs, AR 71913-4697

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Laboratory Director

SL/bp

THOMASON LUMBER & TIMBER COMPANY

JUNE 19-21, 1990 GROUND-WATER SAMPLING

SAMPLE	LOCATION
900621-1A	MW-1A
900621-1CD	MW-1CD
900621-1CD-1	MW-1CD FIELD BLANK
900621-1D	MW-1D
900620-2A	MW-2A
900620-2D	MW-2D
900620-2D-1	MW-2D DUPLICATE @ 2D
900620-2E	MW-2E
900620-2E-1	MW-2E FIELD BLANK
900621-4A	MW-4A
900621-4D	MW-4D
900621-4D-1	MW-4D DUPLICATE @ 4D
900621-4G	MW-4G
900620-5A	MW-5A
900620-5C	MW-5C
900620-5D	MW-5D
900619-6A	MW-6A
900619-6C	MW-6C
900619-6C-1	MW-6C WIRELINE BLANK (After Use @ 6C)
900619-6C-2	MW-6C BAILER BLANK
900619-6C-3	MW-6C WIRELINE BLANK (Prior to Initial Use)

OK D007 335524 III

PIEZOMETER INSTALLATION AND PRELIMINARY GROUND-WATER QUALITY REPORT

PREPARED FOR:

THOMASON LUBMER AND TIMBER COMPANY
P.O. DRAWER 278
BROKEN BOW, OKLAHOMA 74738

PREPARED BY:

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APRIL 30, 1990

B&F JOB NO. 7-2397-0101

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1.0 INTRODUCTION

1.1 Executive Summary

Thomason Lumber and Timber Company owns and operates a wood treatment facility located near Broken Bow, Oklahoma. The Administrative Consent Order (ACO) required that piezometers be installed as part of the site characterization for the facility. A total of fourteen piezometers were installed. During the abbreviated eight week period allowed by the U.S. EPA, water levels in all piezometers were measured for determination of seasonal variations in water-level elevation at the site. The existing piezometers were constructed to monitoring well specifications and are adequate to monitor the ground-water quality at the subject site. A ground-water sampling event and aquifer testing were conducted to characterize ground-water quality and determine the basic hydrogeologic characteristics of the site.

The preliminary data indicate that the present network of wells is adequate for detecting any contamination of ground-water resulting from past and present activities at the facility. Although small quantities of sampled parameters were detected in a few of the ground-water samples taken at the site, a single event is insufficient to establish any trends in the data. Additional sampling will be required to establish trends and determine whether laboratory error or other factors are responsible for the detected parameters. Thomason Lumber and Timber Company, therefore, proposes not to add additional

monitoring wells until it may be ascertained that ground-water contamination does indeed exist at the site. It is also proposed that prior to expansion of the ground-water monitoring network and ground-water remediation, five (5) additional ground-water sampling events, as requested by the ACO, and a Ground-Water Quality Assesssment report be completed and submitted to the U.S. EPA for review.

1.2 Site Location

Thomason Lumber and Timber Company (Thomason) owns and operates a wood treating plant southeast of the community of Broken Bow, in McCurtain County, Oklahoma. More specifically, the plant is located south of U.S. Highway 70 and East of Silvey Road, and occupies portions of the west half of the northeast quarter of Section 19, Township 6 South and Range 25 East. Figure 1.1 presents the location of the plant in relation to the southeastern Oklahoma region and Figure 1.2 presents the location of the plant in relation to the Broken Bow, Oklahoma community.

1.3 Site Regulatory History

On December 16, 1980, representatives of EPA inspected the Thomason site under authority granted by the Resource Conservation and Recovery Act of 1976 (RCRA). During that inspection, potential hazardous waste sites were evaluated, and K001 wastes, as described by 40 CFR Part 261, were found. These wastes are defined to be bottom sediment sludges from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol (PCP).

The previous owners of Thomason notified EPA of hazardous waste activity at the facility on March 9, 1981, pursuant to Section 3010(a) of RCRA. This notification identified Thomason as a generator and treator, storer or disposer of the following listed hazardous wastes:

- pentachlorophenol (PCP) (F027)
- Bottom sludge from the treatment of waste water from wood preserving processes that use creosote and/or pentachlorophenol (PCP) (K001).

In March, 1985 the present owners of Thomason entered into a consent agreement with the Oklahoma Water Resources Board (OWRB) to close the inactive surface impoundments at the Broken Bow facility. That agreement directed Thomason to remove the material from two decommissioned surface impoundments and transport it to a permitted disposal facility. The order also directed Thomason to fill and close the ponds. OWRB notified the Oklahoma State Department of Health (OSDH) in March, 1985 of the consent agreement with Thomason, and of the subsequent closure plan. OSDH did not intervene at that time as the agency of jurisdiction, and Thomason implemented the plan. United States Pollution Control, Inc. (USPCI) was contacted about receiving the wastes at the Lone Mountain disposal facility, and they indicated that the waste would be acceptable. Based on that information, Thomason removed and stockpiled the material from the pond bottoms, subsequent to transport for disposal. Thomason then backfilled the ponds with clay material and revegetated the area.

Although USPCI initially indicated to Thomason that the stockpiled waste would be accepted for disposal at their Lone Mountain Facility, problems at that facility resulted in delay and, their refusal to file a disposal plan for Thomason's stockpiled material. As a result, Thomason was unable to transport the stockpiled waste for disposal.

On September 4, 1985, OSDH conducted an inspection of the Thomason facility. The inspector indicated to Thomason that the surface ponds had contained designated hazardous waste, and were therefore considered to be Treatment/Disposal/Storage (T/D/S) facilities. As a result, the closure of those ponds should have been regulated by OSDH, and Thomason had unknowingly violated appropriate regulations by closing the ponds without their approval.

In an effort to assure that the plant was in regulatory compliance, Thomason corresponded with OSDH requesting a meeting to clarify regulatory responsibilities and requirements. Based on that request, a joint meeting was held among OSDH, OWRB and Thomason at McAlester, Oklahoma in October, 1985. At that meeting, OSDH indicated that they were the lead agency regulating the pond closures, and that they would issue a warning letter to Thomason stating what was necessary to bring that plant into regulatory compliance. Thomason received correspondence on February 13, 1986, which provided a 30 day period in which to address the listed citations.

On January 7, 1986, the United States Environmental Protection Agency (EPA) performed an inspection of the Thomason site. At that time EPA indicated that they had assumed jurisdiction for the Thomason facility, and were now the lead regulatory agency. This inspection was followed by a compliance order from EPA on February 24, 1986, addressing essentially the same concerns as the OSDH letter.

Because it was not clear who was acting as lead agency, and what schedules were effective for compliance, Thomason requested a joint meeting with EPA and OSDH to clarify these points. That meeting was held on or about March 10, 1986, and ended in the agreement that Thomason should request a settlement conference to address these concerns. Thomason requested that conference in correspondence on March 24, 1986.

The settlement conference was held on August 1, 1986. At that conference it was determined that the EPA compliance order, as revised by negotiation, would be the effective order. OSDH agreed to accept that order. EPA would act as lead agency, but that OSDH would have the ability of review and approval via comments to EPA.

Subsequent to that meeting, various aspects of the compliance order were negotiated. Final agreement was reached and signed on December 24, 1986 and received by Thomason on January 5, 1987.

1.4 Preliminary Site Investigation

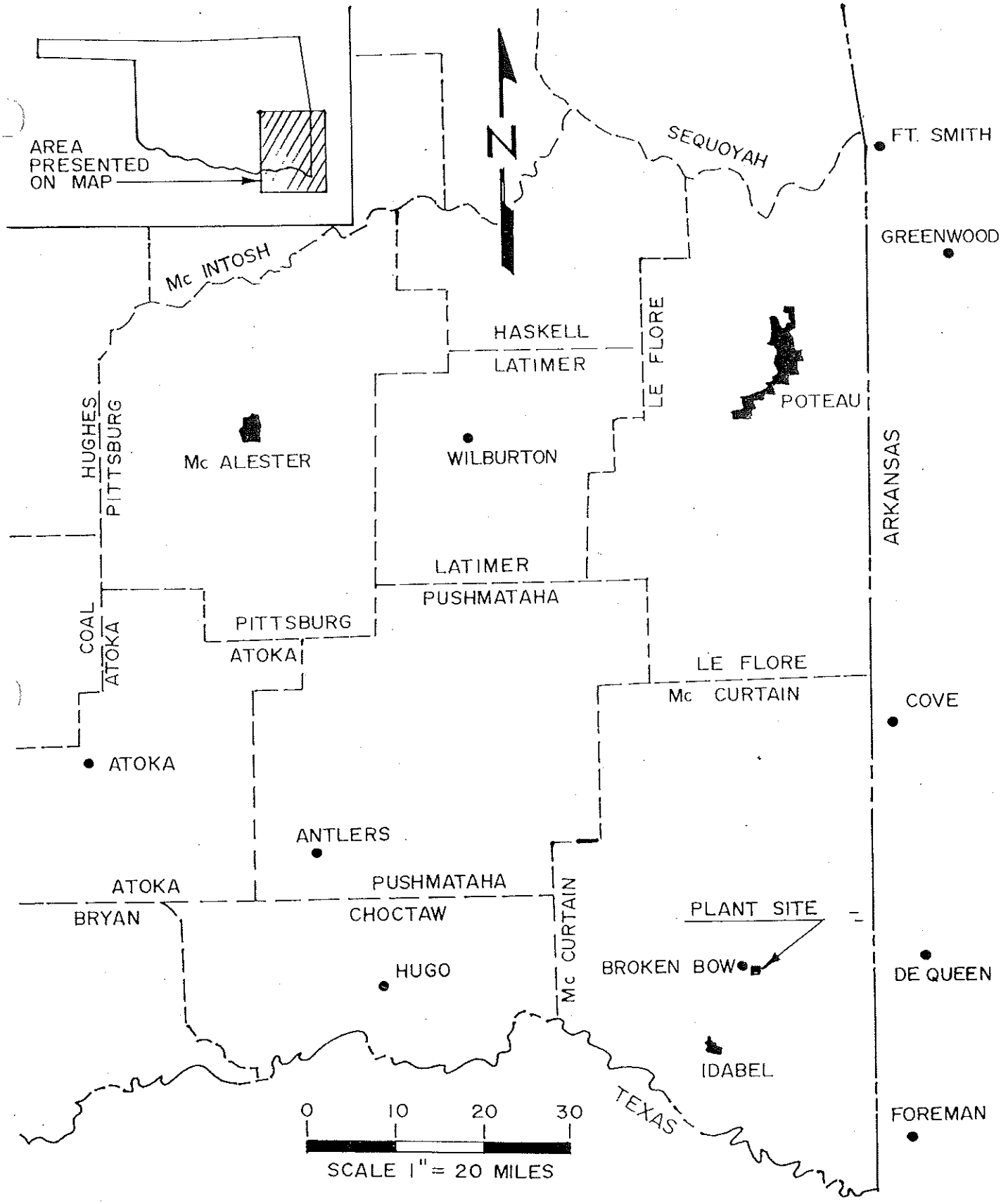
As a part of a consent agreement with the United States Environmental Protection Agency (EPA) to close inactivated hazardous waste management facilities at the plant, Thomason agreed to prepare a hydrogeologic characterization of the site. Characterization of the subsurface lithologies beneath the site was initiated with the advancement of four (4) boreholes through the surficial Antlers Sandstone, and into the upper 10 feet of the variegated clays of the underlying De Queen Limestone. In addition to the four (4) deep borings, soil samples were collected from borings installed across the affected site. These samples were analyzed to determine the occurrence and depths of contaminants present at the site.

A preliminary report, based on the results of borehole advancements and soil analyses, was submitted to the EPA for approval. As a component of the preliminary site characterization report, Thomason proposed the location and depths of piezometers for installation at the site for EPA consideration. These piezometers were to be installed, as requested by EPA, to determine the highest and lowest water levels and direction of ground-water flow in the uppermost aquifer beneath the site.

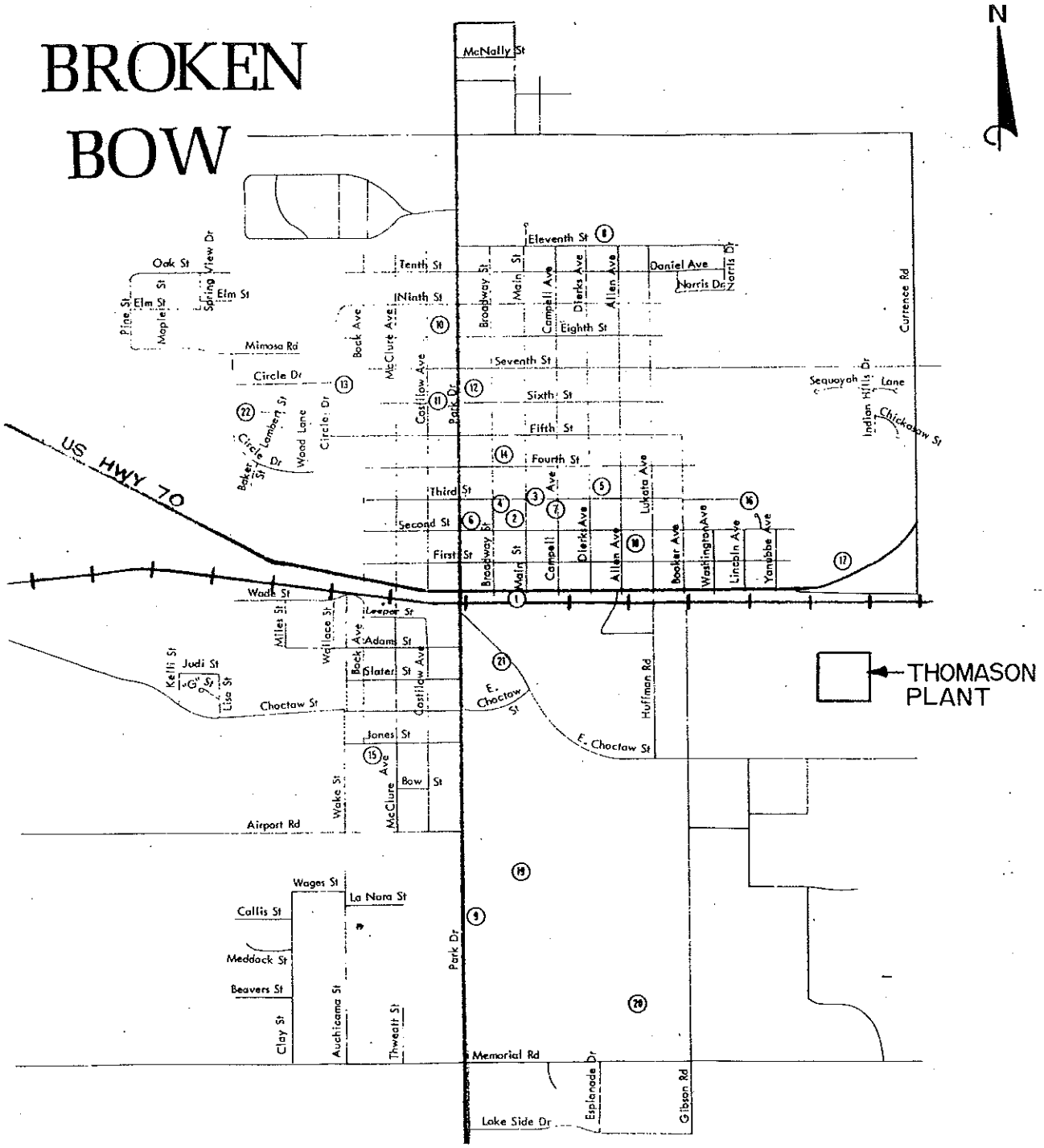
The preliminary site characterization report was submitted to EPA on February 12, 1988. Final approval and confirmation to proceed was given by EPA in February, 1989. Piezometer installation began on September 5, 1989.

1.5 Purpose of Report

This document is designed to supplement the Preliminary Site Characterization Report submitted February 12, 1988 and reports findings resulting from piezometer installation and water level measurements conducted at the subject site. In addition, the results of aquifer tests and the first ground-water sampling event conducted at the site have been presented. As required in the Consent Order, this report proposes a ground water monitoring network plan (Appendix G). The Ground-Water Sampling and Analysis Plan (SAP) for the study site was submitted to the U.S. EPA on February 23, 1990. This report submits two (2) proposed amendments to the SAP. A revised schedule of events is included as Section 6.0.



Surv.	B&F ENGINEERING, INC. 928 AIRPORT RD., HOT SPRINGS, ARK. 71913 • 767-2366	DWG. NO.
Approved:	FIGURE 1.1 REGONAL LOCATION MAP **THOMASON LUMBER & TIMBER COMPANY**	SCALE: N.T.S. DATE: APRIL, 1990 BK. NO.



Surv.	B&F ENGINEERING, INC. 928 AIRPORT RD., HOT SPRINGS, ARK. 71913 • 767-2366	DWG. NO.
n.	FIGURE 1.2 PLANT VICINITY THOMASON LUMBER & TIMBER COMPANY	
Ck.		SCALE: N.T.S.
Approved:		DATE: APRIL, 1990
		BK. NO.

Hall 6053

2.0 PIEZOMETERS

2.1 General

Data from the Preliminary Site Investigation Report (PSI) (1988) was used to establish locations for the piezometer nests and the intervals in which the wells were to be completed. Each "sand" member illustrated in the PSI report was assigned an ad hoc designation. The units were labelled alphabetically and in ascending order with the basal sand unit being designated as "A". The alphabetic labels were then used to indicate the interval in which a well was to be completed. For example, well P-4C was to be completed in interval C at location 4.

Three (3) intervals were targeted for investigation and were designated A, C, and D. Although approximate depths for each well had been estimated based on data from the PSI, the actual determination was to be made in the field based upon information obtained while drilling the deepest well boring in each piezometer nest.

Although the well completion intervals selected in the field appeared to correlate with the intervals targeted using the PSI report, it was decided to verify the correlations using borehole geophysical logs. A slim-line gamma-ray / neutron tool was used to log inside the the deepest well in each piezometer nest, as well as the boring for P-5A. A combination tool which provided caliper, gamma-ray, density, and resistivity data was also used in the boring for P-5A. Subsequent correlation of the geophysical logs revealed that some of the wells did not

correlate with their original targeted intervals. The relationship between the well intakes and the intervals in which they were completed are illustrated on the geophysical logs presented as Appendix A. A panel diagram to illustrate the spatial relationships between the intervals was prepared using the correlated geophysical data, and is presented as Drawing 3. Lithologic descriptions have been included with the well construction records and are presented as Appendix B. Below is a listing of the piezometers and the interval(s) in which each well was completed.

Well	Sand Interval	Well	Sand Interval
P-1D	Du - Dm	P-5D	Du - Dm
P-1C	Dl - Cu	P-5C	Cu - Cl
P-1A	A	P-5A	A
P-2D	E	P-6C	Cl
P-2C	Du - Dm	P-6A	A
P-2A	A		
P-4D	Gl		
P-4C	Du		
P-4A	A		

Well intake and sand interval relationships are illustrated in the geologic cross sections presented as Drawing 5.

2.2 **Drilling**

All borings were drilled using rotary-wash methods. A truck mounted Failing 1250 drill rig was employed to advance the borings in which the wells were installed. Water used as the circulation fluid was from the Broken Bow municipal water supply

and was obtained at the municipal fire station.

The borings for all wells were drilled through an eight (8) inch diameter PVC surface casing which had been grouted in place. The eight inch diameter surface casing was installed in order to stabilize the upper portion of the boring, prevent possible contamination of the well boring by surface materials, and to prevent circulation fluid leakage. A second surface casing using five (5) inch diameter PVC was installed in well borings where the quality of the drilling fluid had, for any reason, become suspect.

All equipment used in drilling was decontaminated using a laboratory grade soap which was followed by a high pressure hot water rinse using clean water. Advancement of a well boring inside a PVC surface casing was resumed only after the circulation pump and lines were decontaminated, and the circulation fluid flushed from inside the casing using clean water. The circulation tank was then decontaminated and boring advancement resumed. Fluids resulting from drilling and decontamination operations were transported to the resource recovery system disposal on site. Cuttings were containerized and retained on site. No lubricants were allowed on any drill rods, bits, or associated tools.

The deepest boring at each of the piezometer nests was logged by a geologist.

2.3 Well Installation

All wells were installed in individual boreholes. The total depth of each well boring was measured prior to installing any well materials. The decontaminated well casing, screen, and centralizer were installed to the selected depths, and held in position until the filter pack and bentonite pellets had been placed. Disposable latex or PVC gloves were worn during well installations. The materials used in constructing the wells were of new manufacture, and were inspected for quality and cleanliness by the geologist. The screen interval for all wells consists of four (4) ft of Ø.Ø2Ø " machine sawn slots. The well casing and screen used in construction of the wells was of either two (2) or four(4) inch I.D., internally threaded, schedule 4Ø polyvinylchloride (PVC) materials. A stainless steel centralizer and one (1) foot sump are located at the bottom of each well.

The filter pack consisted of 16 - 3Ø silica sand (Colorado Silica Sand, Inc.) and was tremmied into place from the bottom to a level one (1) to two (2) ft. above the top of the slots, raising the tremmie as necessary for the proper placement of the sand. Water from the municipal water system was used to wash the filter-pack sand down the tremmie. The bentonite pellets were placed by slowly pouring them directly down the annulus from the top. Tape down measurements for quality control were made by the geologist during each phase of well installation.

The annular space between the bentonite pellets and the ground surface was sealed using an expanding neat cement grout. The

grout consisted of four (4) pounds of bentonite powder and six and one-half (6.5) to eight (8.Ø) gallons of clean water per each 94 pound sack of portland cement. All quantities used in the grout mix were measured. Grout was placed into the well annulus by tremmiing from the bottom. The fluid in the boring which was displaced by the grout was captured in the circulation tank, pumped into a trailer mounted waste-water tank, and transported to the resource recovery system for disposal on site.

A four (4) feet X four (4) feet X six (6) inch reinforced concrete pad was constructed around each well. Reinforcement of the concrete pad consists of four (4)- 36 inch x 3/8 inch rebar in each direction for a total of eight (8) pieces per pad. Each well pad has a permanent survey monument embedded in the concrete. Each well is protected by a locking steel security cover.

2.4 Well Development

Development of the piezometers was accomplished by hand bailing using dedicated bailers for each well. Teflon bailers were used in the development of all wells except the four (4) inch diameter wells P-2A, C, and D. Large capacity PVC bailers were acquired for use in developing the four (4) inch diameter wells. Although most of the wells were developed until the fluid removed from them had become clear and sediment free, fluid from six (6) wells still exhibited a slight cloudiness. The slight cloudiness is the result of clay sized particles which had settled to the bottom of the well and were susequently placed back into

suspension when disturbed by the bailer. Traces of clay at the bottom these wells is difficult to remove entirely, and will be removed during the subsequent sampling events. Table 2.1 is a listing of the wells and the quantity of fluid removed from each well during development. All fluids removed from wells were containerized and transported to the resource recovery system for disposal on site.

TABLE 2.1

Well Development Quantities

Well	Quantity (Gallons)	Well Volumes	Well	Quantity (Gallons)	Well Volumes
P-1D	124	45	P-5D	25	7
P-1C	46	10	P-5C	96	19
P-1A	100	15	P-5A	165	20
P-2D	173	26	P-6C	237	138
P-2C	204	16	P-6A	320	68
P-2A	219	7			
P-4D	56	28			
P-4C	132	28			
P-4A	246	23			

3.Ø Geology

The Thomason Lumber and Timber Company wood treating facility is situated on a narrow ridge which trends roughly west to east. The surface elevation at the site ranges from approximately 494 ft. MSL at P-2, near the center of the facility, to approximately 455 ft. MSL near P-6 in the northeastern corner of the site. A clayey gravel ranging from zero (Ø) to 14 feet in thickness covers the central portion of the ridge.

3.1 Antlers Sandstone

The Antlers Sandstone underlying the facility ranges in thickness from approximately 45 feet at P-6, to approximately 1ØØ feet at P-2. The interbedded sandstones and clays which make up the Antlers Sandstone are of varying thickness and occasionally include carbonaceous and pyritic intervals. Gradational as well as abrupt contacts between the interbedded units occur within this portion of the Antlers Sandstone.

The sandstone units are typically very-fine to fine grained, friable, silty, sometimes clayey, and range in coloration from grey to yellow-orange. Typically the sandstone units are separated by thin clays. The clays tend to be firm, occasionally stiff, typically silty, occasionally sandy, and range in coloration from grey and dark grey to yellow and red-orange.

Lithologic sample descriptions of materials penetrated while advancing the boreholes for well installation are included in Appendix B. Sample descriptions were used to evaluate the

geophysical log signatures with respect to lithology. The geophysical signatures were then correlated and used in developing both the Interval Correlation Panel Diagram (see Drawing 3) and the geologic cross sections presented as Drawing 5. The geophysical log signatures are presented in Appendix A. Based upon outcrop patterns and subsurface information obtained at the site the, Antlers is dipping very gently to the south.

3.2 De Queen Limestone

The De Queen Limestone beneath the site is characterized by variegated clays with lignitic and pyritic stringers interbedded with very thin micritic and/or fossiliferous limestones. The De Queen Limestone is conformably overlain by the Antlers Sandstone.

4.0 GROUND WATER

4.1 Water-level Monitoring

Water levels in the piezometers were monitored weekly for a period of eight (8) weeks beginning on November 21, 1989. A final round of water-level measurements was made on April 2, 1990 prior to a ground-water sampling event using the existing piezometers. The intent of the water-level monitoring activity was to observe formation response to precipitation events, and to establish any seasonal trends in water-level fluctuations.

All water-level measurements were obtained using an electric wireline and recorded to the nearest 0.01 foot. The measurement point for each well is the top of the PVC well riser. The location and elevation for each well has been established by a registered surveyor. Piezometer locations are presented as Drawing 1.

Depth to water measurements were converted to water-level elevations and are presented as Table 4.1. Intervals in which the wells were completed were correlated using borehole geophysical logs and lithologic information obtained while drilling. The appropriate wells for an interval were then used to develop the potentiometric surface map for that interval. A conceptual water-table configuration map was also developed. The water-table configurations were developed using the highest water-level elevation at each of the five (5) piezometer nests.

Contour maps depicting potentiometric surfaces and conceptual water-table configurations were prepared using both the eight week averaged water-level elevations, and the elevations calculated from water-level measurements made on April 2, 1990. These maps are presented as Drawings 6, 7, 8, 9, 10, and 11.

4.2 **Aquifer Testing**

Due to the stratified nature of the Antlers Sandstone, three (3) intervals in the formation were to be subjected to 72 hour pumping tests. These tests were to be performed in an effort to determine hydraulic conductivity (K) values and evaluate the potential for vertical communication between intervals. A preliminary test of the four (4) inch diameter wells (P-2 A, C, and D) was conducted by filling each of the wells with clean water from the municipal water supply, and monitoring the rate of water-level decline in the wells. The results of this preliminary test indicated that 72 hour pumping tests would not be feasible due to the slow rates of recovery observed during the test. Therefore, the four-inch diameter wells were subjected to slug test evaluations instead of the 72 hour pumping tests. Wells P-3 A, C, and D, which were to have been used as observation wells during the pumping tests, were no longer necessary, and therefore not installed.

4.2.1 Data Acquisition

Slug tests were conducted by displacing a known volume of water within the well bore. The slugs used to displace the water were made of Schedule 40, flush threaded PVC filled with clean silica

sand. Static water levels were determined using an electric wireline and recorded to the nearest Ø.Ø1 foot. Changes in water levels during the tests were recorded using a 1Ø psi pressure transducer and a data recording unit (Model 1ØØØB) manufactured by In-Situ, Inc..

4.2.2 Data Analysis and Results

Water-level versus time data for the slug tests were plotted and analyzed using graphical methods and an adaptation of a standard statistical analysis package (SAS Institue, Inc.) in accordance with the methodology prescribed by Bouwer and Rice (1976). Water-level displacement values (Y), in feet, were plotted on a logarithmic vertical axis and time (t), in seconds, was plotted on an arithmetic horizontal axis. Aquifer hydraulic conductivities were estimated using the equation given by Bouwer and Rice:

$$K = rc^2 \ln(R_e/r_w)/2L \ (1/t) \ \ln(Y_\emptyset/Y_t)$$

The parameters used in solving the above equation have been listed on the water-level displacement vs time plots presented in Appendix D, and were determined in the following manner: The slope of the first straight line portion of the Bouwer and Rice figure is characterized by the term $1/t \ \ln(Y_\emptyset/Y_t)$. $Y_\emptyset$ is the head value at time t=Ø. The time t was determined as the time value required for the straight line response to extend from $Y_\emptyset$ to some convenient Y value (Y_t) such as Ø.1 or 1.Ø. The term $\ln(R_e/r_w)$, regarding the zone of influence for the water flow field around the well, was evaluated for partially penetrating

wells P-2C and P-2D from:

$$\ln(R_e/r_w) = 1/[(1.1/(\ln(H/r_w)))+((A+B \ln((D-H)/r_w))/(L/rw))]$$

In the case of well P2-A, where H (the water-column in the well) equals D (the aquifer's saturated thickness) and is fully penetrating:

$$\ln(R_e/r_w) = 1/[((1.1/\ln(H/r_w)))+(C/(L/r_w))]$$

A, B, and C are dimensionless parameters determined graphically from Figure 4.1 (adapted from Figure 3 of Bouwer and Rice, 1976). The terms r_c, r_w, and L were assigned values of Ø.167 ft., Ø.333 ft., and 4.Ø ft. respectively for all wells tested.

4.3 **Ground-Water Movement**

Water-level elevation contours indicate that the wood treatment facility is located in a ground-water recharge area and that the aquifer is acting under unconfined or leaky confined conditions. Although the ground-water divide shifts slightly in response to precipitation, and with regard to depth, it remains located beneath the topographic high upon which the facility is situated.

4.3.1 Rate and Direction

The horizontal directions of ground-water flow at the site are to the northeast, east, southeast, south, and southwest as illustrated in Drawings 6 - 11. Head differentials between wells within the piezometer nests indicate a downward vertical flow component (see Appendix C).

Darcian and seepage velocities were estimated using hydraulic conductivity values obtained from slug test analyses and two (2) representative hydraulic gradients for each of the two intervals D and A. The location and direction of the gradients selected are depicted on Drawings 7 and 8 respectively. The eight-week average gradients were used as representative gradients as they indicate conditions observed over a longer duration.

The Darcian velocities were calculated from $v = K\ dH/dL$, where K is the hydraulic conductivity determined from slug test analyses and dH/dL is the hydraulic gradient determined graphically from the distribution of potentiometric surface contours. Average seepage velocities are obtained using a porosity value of Ø.3Ø such that a Darcian volume of water per unit area is assumed to be migrating through approximately 3Ø percent of the given cross-sectional area.

Table 4.2 presents Darcian and seepage velocities for geologic intervals A and D. The velocities presented below were calculated based upon hydraulic gradients established from averaged water-level data recorded at the Thomason site between November 21, 1989 and January 2Ø, 199Ø.

Table 4.2
Ground-Water Velocities for Geologic Intervals A and D

Geologic Interval	Flow Direction	K cm/sec	dH/dL	Velocities Darcian ft/day	Darcian ft/yr	Seepage ft/day	Seepage ft/yr
D	NE	4.95E-4	Ø.Ø177	Ø.Ø24	8.76	Ø.Ø8Ø	29.2Ø
D	SW	4.95E-4	Ø.ØØ79	Ø.Ø11	4.Ø2	Ø.Ø37	13.51
A	NE	4.Ø7E-4	Ø.Ø1Ø5	Ø.Ø12	4.38	Ø.Ø4Ø	14.6Ø
A	SW	4.Ø7E-4	Ø.Ø182	Ø.Ø21	7.67	Ø.Ø7Ø	25.55

4.3.2 Seasonal Fluctuations and Response to Precipitation

Well hydrographs for each of the well nests have been prepared using water-level data obtained during the eight-week monitoring period and from the April 2, 1990 water-level measurements (see Appendix C). The water-level elevations appeared to be either slightly declining or at a roughly steady elevation until the onset of increased precipitation beginning in late December of 1989. A steady increase in the monthly cumulative and individual precipitation events is reflected in all well hydrographs. Beginining with the end of December, 1989 the steady increase in precipitation has led to a steady increase in the water-level elevations in all wells culminating with rises in elevation ranging from 0.96 ft. in P-4A to 4.1 ft. in P-4C between the end of the eight-week monitoring period and the April 2, 1990 measurements. The response of the aquifer to local precipitation appears to be uniform and rapid.

The water-levels reflected by the April 2, 1990 contour maps would appear to have achieved their highest seasonal elevations. The rainfall recorded for the month of March, 1990 was abnormally high. Therefore, water-level elevations at the site should not increase during the subsequent summer months of lower precipitation and higher evapo-transpiration rates, and may reflect the highest elevations likely to occur during the year. Although the full range of seasonal water-level variations has not yet been established, water-level data gathered during the subsequent ground-water sampling events will be used to complete the evaluation of seasonal trends.

4.4 Ground-Water Quality

A ground-water sampling event was conducted on April 3rd and 4th, 1990 in order to assist in developing a ground-water quality monitoring program for the facility. Sampling of the existing piezometers was performed in accordance with the procedures presented in the Ground-Water Sampling and Analysis Plan submitted to the U.S. EPA on February 23, 1990.

The piezometers used in the ground-water sampling event were installed using the same conditions and specifications required for drilling and installing wells to be used for ground-water quality monitoring (see Appendices B and G).

4.4.1 Results

Laboratory data indicate very low concentrations of PCP in only three (3) of the ground-water samples. The three (3) Creosote indicators; Acenapthylene, Fluoranthene, and Napthalene were not detected in any of the ground-water samples. The results of the laboratory analyses are presented as Table 4.3. The laboratory reports and sample Quality Assurance forms (ie. Chain-of-Custody forms) may be found in Appendices E and F respectively.

Specific Conductivity and pH measurements of ground-water samples were taken in the field. The values for these parameters were recorded on the field logs which may be found in Appendix F. Several pH and Specific Conductivity values were taken at each location. The average values for pH and Specific Conductivity range from 4.0 to 6.5 SU and from 41 to 225 micromhos

respectively. The depressed pH values are likely due to the oxidation of iron sulfide (Pyrite). The variance in Specific Conductivity values does not appear to be attributable to any activities related to the wood treating facility.

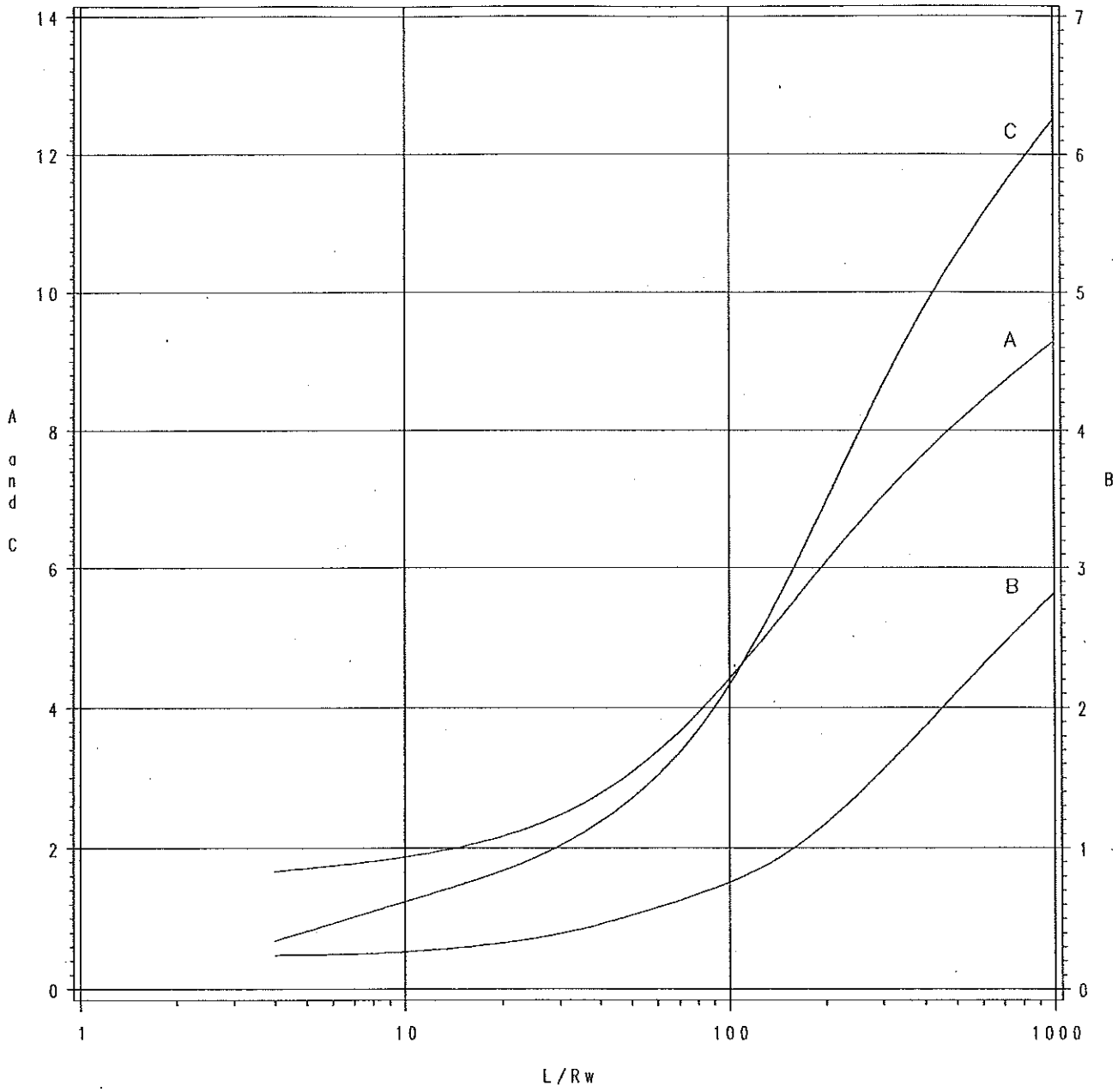


FIGURE 4.1
CURVES RELATING COEFFICIENTS A, B, AND C TO L/Rw
ADAPTED FROM FIG. 3., BOUWER AND RICE (1976)

TABLE 4.1
WATER LEVEL ELEVATIONS
THOMASON LUMBER AND TIMBER COMPANY
BROKEN BOW, OKLAHOMA

OBS	WELL	DATE	ELEV.
1	P1A	21NOV89	446.86
2	P1A	28NOV89	446.72
3	P1A	07DEC89	446.77
4	P1A	21DEC89	446.76
5	P1A	30DEC89	446.55
6	P1A	04JAN90	446.78
7	P1A	15JAN90	446.80
8	P1A	20JAN90	447.75
9	P1A	02APR90	450.59

OBS	WELL	DATE	ELEV.
10	P1C	21NOV89	450.68
11	P1C	28NOV89	450.40
12	P1C	07DEC89	450.44
13	P1C	21DEC89	450.04
14	P1C	30DEC89	450.13
15	P1C	04JAN90	450.02
16	P1C	15JAN90	450.03
17	P1C	20JAN90	450.26
18	P1C	02APR90	453.15

OBS	WELL	DATE	ELEV.
19	P1D	21NOV89	451.66
20	P1D	28NOV89	451.07
21	P1D	07DEC89	451.14
22	P1D	21DEC89	450.74
23	P1D	30DEC89	450.88
24	P1D	04JAN90	450.71
25	P1D	15JAN90	450.71
26	P1D	20JAN90	450.94
27	P1D	02APR90	453.66

TABLE 4.1 CON'T.

OBS	WELL	DATE	ELEV.
1	P2A	21NOV89	442.59
2	P2A	28NOV89	442.52
3	P2A	07DEC89	442.55
4	P2A	21DEC89	442.36
5	P2A	30DEC89	442.30
6	P2A	04JAN90	443.06
7	P2A	15JAN90	442.94
8	P2A	20JAN90	444.79
9	P2A	02APR90	447.42

OBS	WELL	DATE	ELEV.
10	P2C	21NOV89	451.11
11	P2C	28NOV89	450.49
12	P2C	07DEC89	450.62
13	P2C	21DEC89	450.18
14	P2C	30DEC89	450.44
15	P2C	04JAN90	450.34
16	P2C	15JAN90	450.48
17	P2C	20JAN90	450.96
18	P2C	02APR90	454.41

OBS	WELL	DATE	ELEV.
19	P2D	21NOV89	451.25
20	P2D	28NOV89	450.60
21	P2D	07DEC89	450.72
22	P2D	21DEC89	450.27
23	P2D	30DEC89	450.53
24	P2D	04JAN90	450.41
25	P2D	15JAN90	450.53
26	P2D	20JAN90	451.01
27	P2D	02APR90	454.41

TABLE 4.1 CON'T.

OBS	WELL	DATE	ELEV.
1	P4A	21NOV89	446.67
2	P4A	28NOV89	446.52
3	P4A	07DEC89	446.39
4	P4A	21DEC89	446.15
5	P4A	30DEC89	445.99
6	P4A	04JAN90	445.93
7	P4A	15JAN90	445.80
8	P4A	20JAN90	445.71
9	P4A	02APR90	446.67

OBS	WELL	DATE	ELEV.
10	P4C	21NOV89	450.13
11	P4C	28NOV89	450.08
12	P4C	07DEC89	450.04
13	P4C	21DEC89	449.93
14	P4C	30DEC89	449.89
15	P4C	04JAN90	449.87
16	P4C	15JAN90	449.83
17	P4C	20JAN90	449.79
18	P4C	02APR90	454.20

OBS	WELL	DATE	ELEV.
19	P4D	21NOV89	450.96
20	P4D	28NOV89	450.26
21	P4D	07DEC89	450.51
22	P4D	21DEC89	449.93
23	P4D	30DEC89	450.35
24	P4D	04JAN90	449.14
25	P4D	15JAN90	450.41
26	P4D	20JAN90	450.84
27	P4D	02APR90	454.94

TABLE 4.1 CON'T.

OBS	WELL	DATE	ELEV.
1	P5A	21NOV89	441.34
2	P5A	28NOV89	441.41
3	P5A	07DEC89	441.29
4	P5A	21DEC89	441.15
5	P5A	30DEC89	441.21
6	P5A	04JAN90	442.02
7	P5A	15JAN90	442.00
8	P5A	20JAN90	444.63
9	P5A	02APR90	447.18

OBS	WELL	DATE	ELEV.
10	P5C	21NOV89	445.56
11	P5C	28NOV89	445.45
12	P5C	07DEC89	445.41
13	P5C	21DEC89	445.16
14	P5C	30DEC89	445.26
15	P5C	04JAN90	445.76
16	P5C	15JAN90	445.79
17	P5C	20JAN90	447.65
18	P5C	02APR90	450.93

OBS	WELL	DATE	ELEV.
19	P5D	21NOV89	449.58
20	P5D	28NOV89	449.15
21	P5D	07DEC89	449.22
22	P5D	21DEC89	448.85
23	P5D	30DEC89	449.03
24	P5D	04JAN90	449.10
25	P5D	15JAN90	449.21
26	P5D	20JAN90	450.27
27	P5D	02APR90	453.97

TABLE 4.1 CON'T.

OBS	WELL	DATE	ELEV.
1	P6A	21NOV89	440.68
2	P6A	28NOV89	440.73
3	P6A	07DEC89	440.58
4	P6A	21DEC89	440.47
5	P6A	30DEC89	440.70
6	P6A	04JAN90	441.72
7	P6A	15JAN90	441.27
8	P6A	20JAN90	444.35
9	P6A	02APR90	446.16

OBS	WELL	DATE	ELEV.
10	P6C	21NOV89	441.55
11	P6C	28NOV89	441.42
12	P6C	07DEC89	441.21
13	P6C	21DEC89	441.09
14	P6C	30DEC89	441.13
15	P6C	04JAN90	441.81
16	P6C	15JAN90	441.73
17	P6C	20JAN90	444.19
18	P6C	02APR90	447.62

TABLE 4.3
CHEMICAL ANALYSIS RESULTS

LOCATION	SAMPLE	PCP mg/l	ACENAPTHYLENE mg/l	FLUORANTHENE mg/l	NAPATHALENE mg/l
P-1A	900403-1A	<0.001	<0.01	<0.01	<0.01
P-1A (Field Blank)	900403-1A-1	<0.001	<0.01	<0.01	<0.01
P-1C	900404-1C	<0.001	<0.01	<0.01	<0.01
P-1D	900403-1D	<0.001	<0.01	<0.01	<0.01
P-2A	900403-2A	<0.001	<0.01	<0.01	<0.01
P-2C	900403-2C	0.0042	<0.01	<0.01	<0.01
P-2D	900403-2D	<0.001	<0.01	<0.01	<0.01
P-2D (Duplicate)	900403-2D-1	<0.001	<0.01	<0.01	<0.01
P-4A	900403-4A	<0.001	<0.01	<0.01	<0.01
P-4C	900403-4C	0.0034	<0.01	<0.01	<0.01
P-4D	900404-4D	<0.001	<0.01	<0.01	<0.01
P-5A	900403-5A	<0.001	<0.01	<0.01	<0.01
P-5C	900404-5C	<0.001	<0.01	<0.01	<0.01
P-5D	900404-5D	<0.001	<0.01	<0.01	<0.01

TABLE 4.3 CON'T
CHEMICAL ANALYSIS RESULTS

LOCATION	SAMPLE	PCP mg/l	ACENAPTHYLENE mg/l	FLUORANTHENE mg/l	NAPATHALENE mg/l
P-6A	900403-6A	<0.001	<0.01	<0.01	<0.01
P-6C	900403-6C	0.013	<0.01	<0.01	<0.01
P-6C (Bailer Blank)	900403-6C-1	<0.001	<0.01	<0.01	<0.01
P-6C (Wireline Probe)	900403-6C-2	<0.001	<0.01	<0.01	<0.01
P-6C (Conductivity Probe)	900403-6C-3	<0.001	<0.01	<0.01	<0.01
P-6C (pH Probe)	900403-6C-3	<0.001	<0.01	<0.01	<0.01
Fire Station (Municipal Water)	900404-FH	<0.001	<0.01	<0.01	<0.01

5.0 Conclusions and Recommendations

5.1 Conclusions

The Thomason Lumber and Timber Company wood treating facility is located in the recharge area of an unconfined or leaky confined aquifer. Recharge to the underlying aquifer is primarily from infiltration of local precipitation events and appears to be fairly rapid. Although ground-water movement is essentially to all directions except to the west and northwest, the primary directions tend to be to the northeast, and to the south and southwest. Darcian and seepage velocities for the aquifer have been estimated to range from 4.02 to 8.76 ft/yr and from 13.51 to 29.20 ft/yr, respectively.

The positive detection of PCP in piezometer P-6C suggests that a low level of ground-water contamination might exist near a closed pond northeast of the facility. The two other positive detections for PCP were at piezometers P-2C and P-4C, and are only slightly above the laboratory detection limits. The shallow piezometers at P-2, P-4, and P-5 did not analyse positive for PCP and would suggest the following:

1) The source of the PCP detected in P-6C is not from the wood treating area of the site but more likely the closed pond immediately southwest of P-6C. The pond had been closed in 1984.

2) The trace level detection of PCP at piezometers P-4C and P-2C may have resulted from contamination of the sample during acquisition (dust, mist or operator error), laboratory error, or from the movement of PCP down dip as a Dense Non Aqueous Phase (DNAP) constituent of the ground-water system. The potential source area for the DNAP constituents could again be the closed pond located immediately southwest of P-6C.

3) The intervals and locations in which the piezometers were completed are suitable for use in detection monitoring of ground-water quality.

5.2 Recommendations

It is recommended that the following be implemented:

1) The existing piezometers, which had been installed using monitoring well specifications and quality control procedures, be administratively converted to monitoring wells and their names changed to reflect the interval(s) in which each has been completed (see Drawing 12 and Appendix G).

2) No additional monitoring wells will be added to the program at this time. The existing well locations and intervals are suitable for the establishment of temporal and spacial trends in ground-water quality at the site.

3) Changes to the Ground-Water Sampling and Analysis Plan submitted to the U.S. EPA on Februaury 23, 199Ø as follows:

p.11, Section 7.2: Only bailer and wireline equipment blanks will be analyzed. No significant sources of interfence which would pose problems to the measurement of conductivity and pH were detected. Neither instrument enters the well or comes into contact with samples sent to the analytical laboratory.

p.11, Section 7.2: Field blanks will be taken at monitoring well locations MW - 1, and MW - 2 (see Drawing 12). This is to evaluate the possibility of sample contamination due to airborn materials.

4) Five (5) additional ground-water sampling events and a Ground-Water Assessment and Recommendations Report as proposed in Section 6.Ø prior to expansion of the existing ground-water monitoring network and any ground-water remediation activities.

6.0 Schedule of Events

The following is the proposed schedule of events:

18/JUN/90: Ground-water sampling event

13/AUG/90: Ground-water sampling event

17/OCT/90: Ground-water sampling event

17/DEC/90: Ground-water sampling event

15/FEB/91: Ground-water sampling event

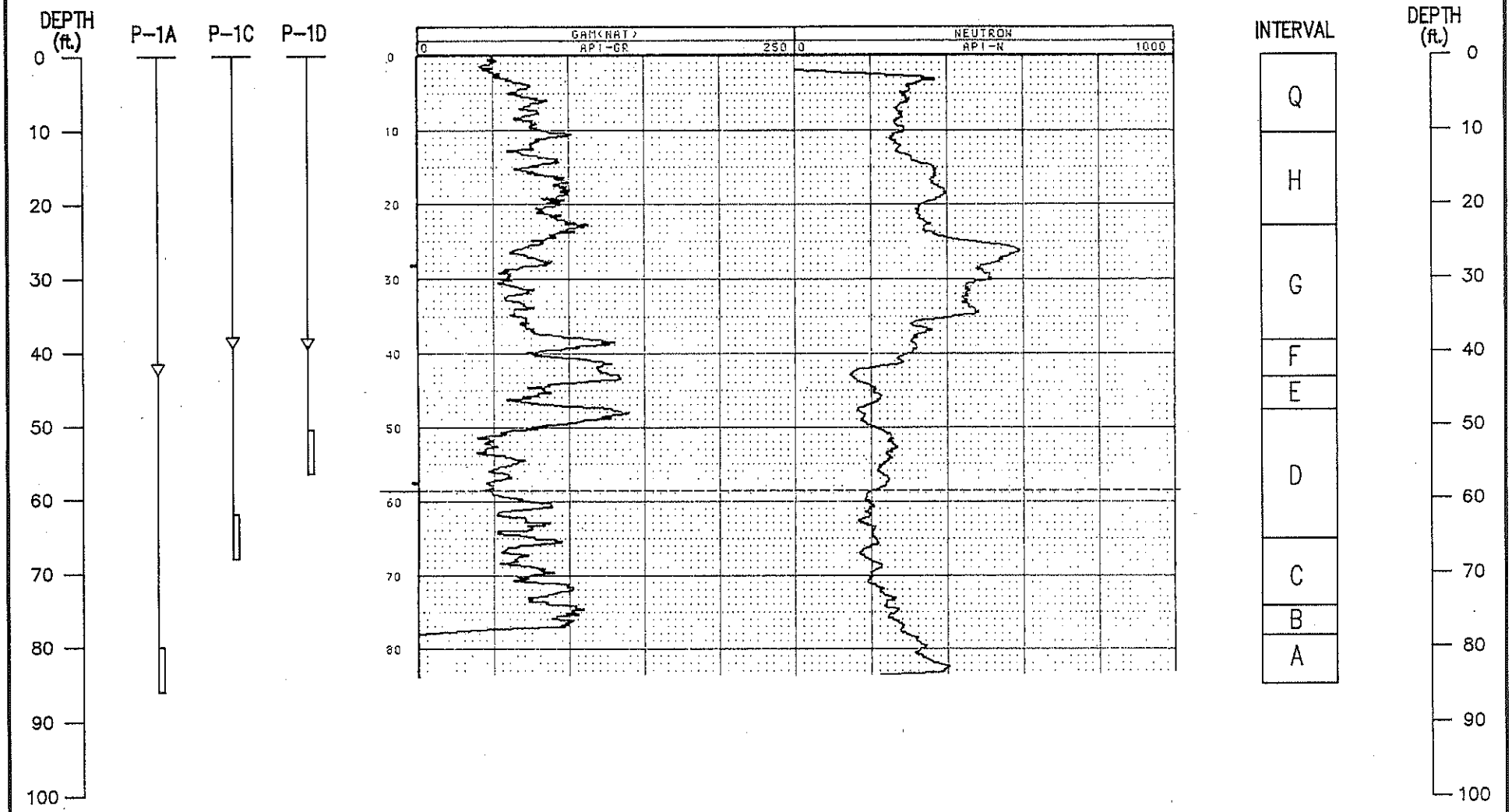
01/MAY/91: Ground-Water Assessment and Recommendations Report

APPENDIX A

GEOPHYSICAL LOGS

WELLS

GEOPHYSICAL LOG



DWN.	CAF	4/90
CK.	PWB	4/90
ACAD NO. 055		
APPROVED:		

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

GEOPHYSICAL LOG FOR WELL P-1

THOMASON LUMBER CO.

BROKEN BOW OKLAHOMA

DWG. NO.

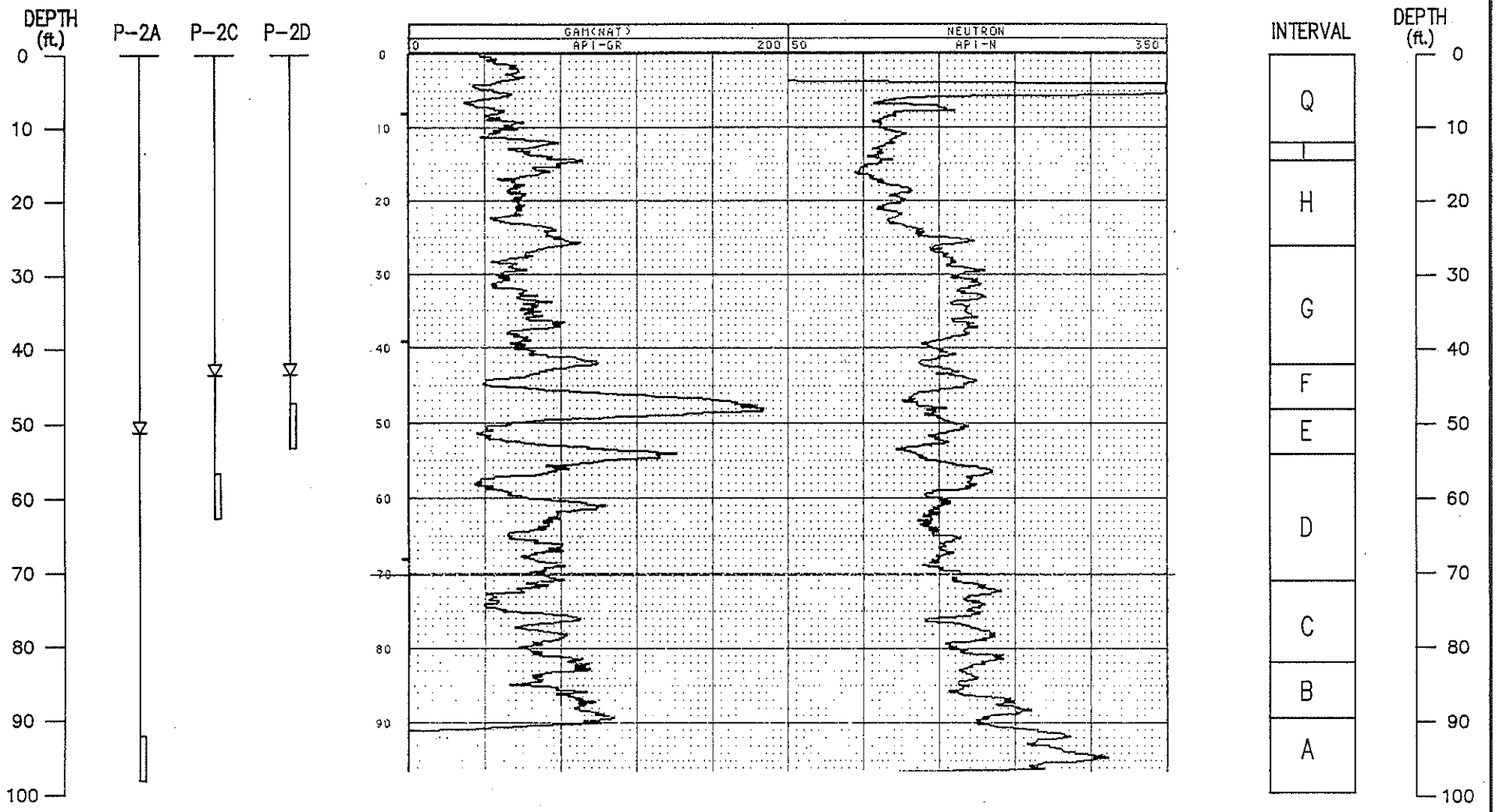
JOB NO: 7-2397-0101

SCALE: AS SHOWN

DATE: APRIL 1990

WELLS

GEOPHYSICAL LOG



DWN.	CAF	4/90
CK.	PWB	4/90
ACAD NO. 051		
APPROVED:		

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

GEOPHYSICAL LOG FOR WELL P-2

THOMASON LUMBER CO.

BROKEN BOW OKLAHOMA

DWG. NO.

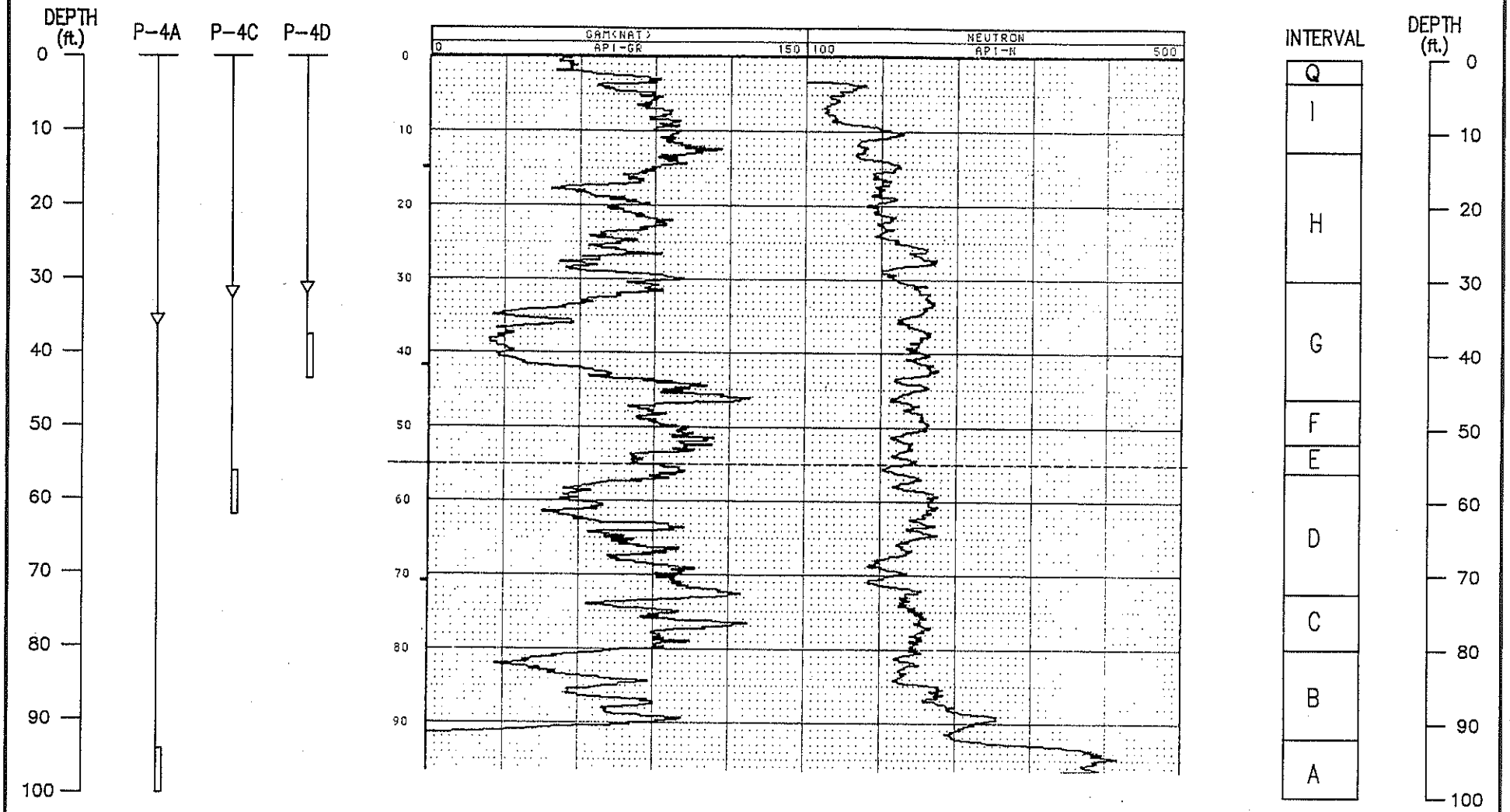
JOB NO: 7-2397-0101

SCALE: AS SHOWN

DATE: APRIL 1990

WELLS

GEOPHYSICAL LOG



DWN.	CAF	4/90
CK.	PWB	4/90
ACAD NO. 052		
APPROVED:		

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

GEOPHYSICAL LOG FOR WELL P-4

THOMASON LUMBER CO.

BROKEN BOW OKLAHOMA

DWG. NO.

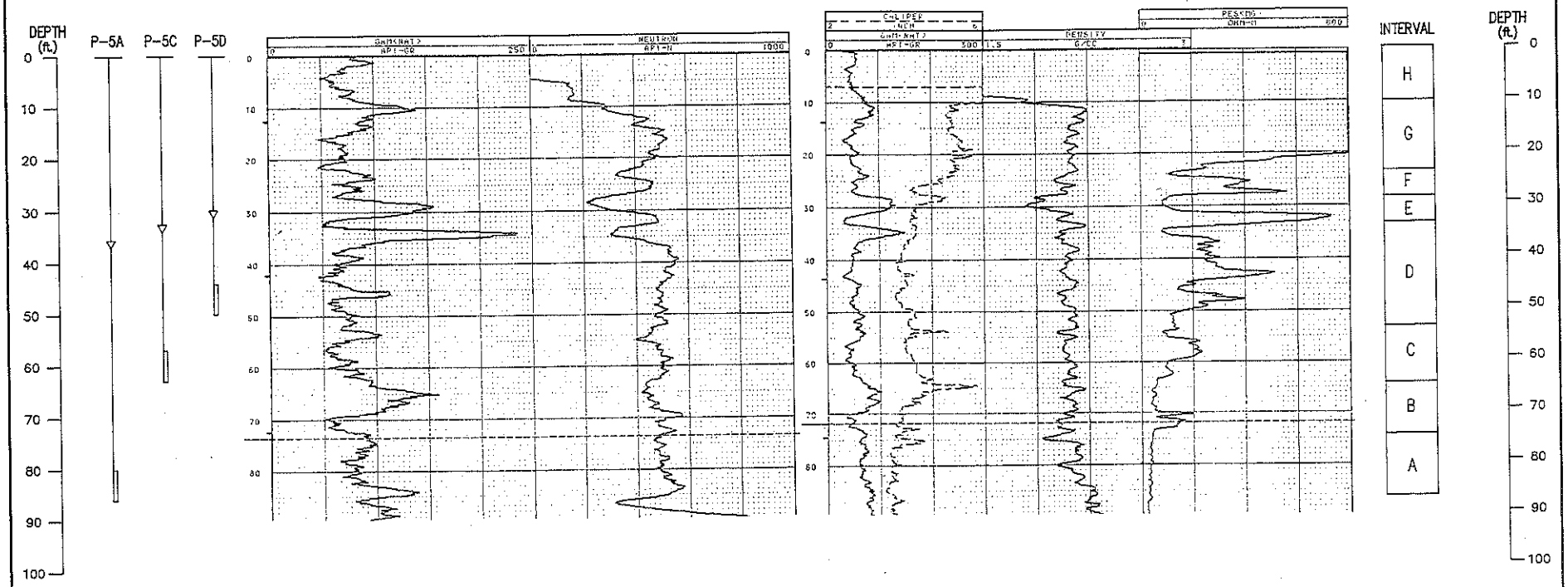
JOB NO: 7-2397-0101

SCALE: AS SHOWN

DATE: APRIL 1990

WELLS

GEOPHYSICAL LOGS



	BY	DATE
Design	PWB	4/90
Drawn	CAF	4/90
Checked	PWB	4/90
Survey		
Fld.Bk.No.		

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(501) 767-2366

GEOPHYSICAL LOGS FOR WELL P-5

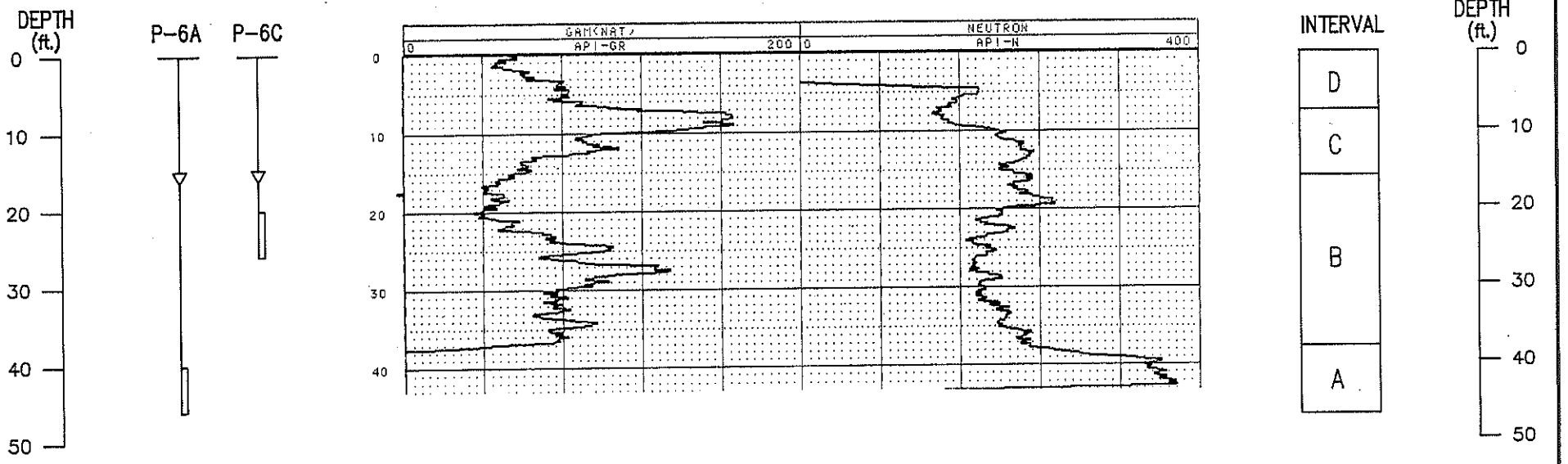
THOMASON LUMBER CO.

BROKEN BOW OKLAHOMA

JOB NO.: 7-2387-0101
ACAD NO.: 054
SCALE: AS SHOWN
DATE: APRIL, 1990

WELLS

GEOPHYSICAL LOG



DWN.	CAF	4/90
CK.	PWB	4/90
ACAD NO. 053		
APPROVED:		

B&F ENGINEERING, INC.
928 AIRPORT RD., HOT SPRINGS, ARK. 71913 767-2366

GEOPHYSICAL LOG FOR WELL P-6

THOMASON LUMBER CO.

BROKEN BOW OKLAHOMA

DWG. NO.

JOB NO: 7-2397-0101

SCALE: AS SHOWN

DATE: APRIL 1990

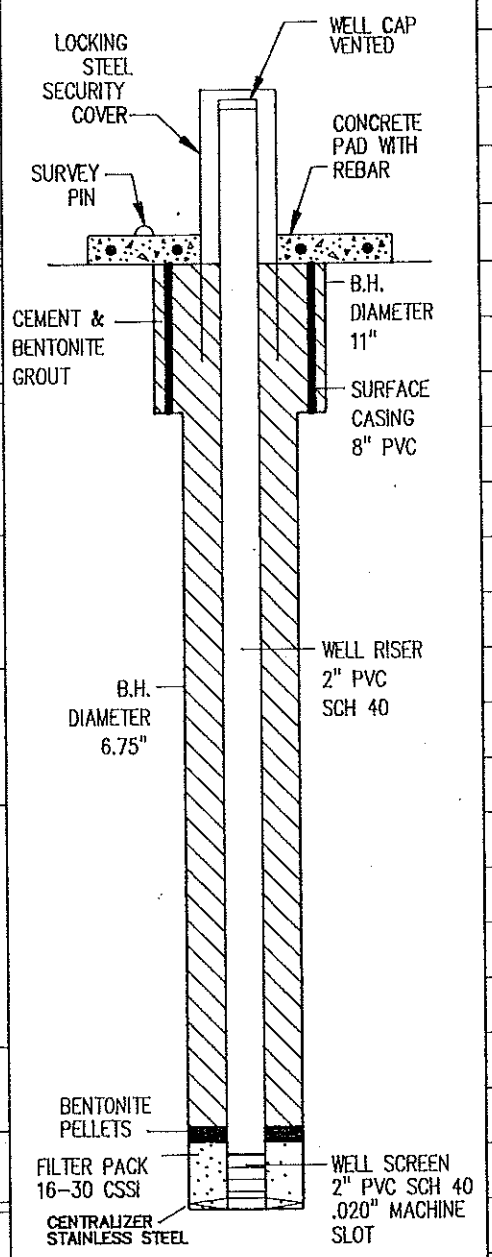
APPENDIX B

WELL INSTALLATION RECORDS

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
491.53				
490.27				
489.8	0.0	SAND: brown to red brown, fine to coarse grained, silty, clayey, pebbly @ 3.5 to 5.0: roots and branches		
	10.0	CLAY: red brown, some silt		
		CLAY: red brown and gray, some silt @ 17.7 to 20.3: silty @ 11.5 to 13.5 and 14.5 to 15.5: sand: yellow orange and gray, very fine grained, silty		
	20.0			
		SAND: yellow orange to light brown, very fine to fine grained, silty, some clay to clayey @ 27.7 to 28.4, 30.8 to 31.2, 32.5 to 33.2, 33.5 to 34.2: clay: yellow and gray , silty, sandy		
	30.0			
		CLAY: gray to dark gray @ 37.1 to 37.5 silty @ 40.8 to 42.3 and 44.0 to 47.5: sand: yellow orange and gray, very fine grained, silty, thinly bedded		
	40.0			
	50.0	SAND: yellow orange and gray, very fine to fine grained, silty, some clay @ 54.5, 56.5, 60.5 to 61.2, 61.9 to 63.0, 65.0 to 66.0 and 69.0 to 70.0: clay: brown and gray, some silt, some sand, very fine		
	60.0			
	70.0	CLAY: dark gray, some silt and sand–very fine (as thin laminae) @ 73.0 to 74.0 & 76.2 to 76.4: sand: gray, very fine grained, silty		
	80.0	SAND: gray, very fine grained, silty, some clay		
		CLAY: dark gray		
	90.0			
	100.0			
	110.0			

Well Completion Detail



B.O.H. = 85.9 FT.

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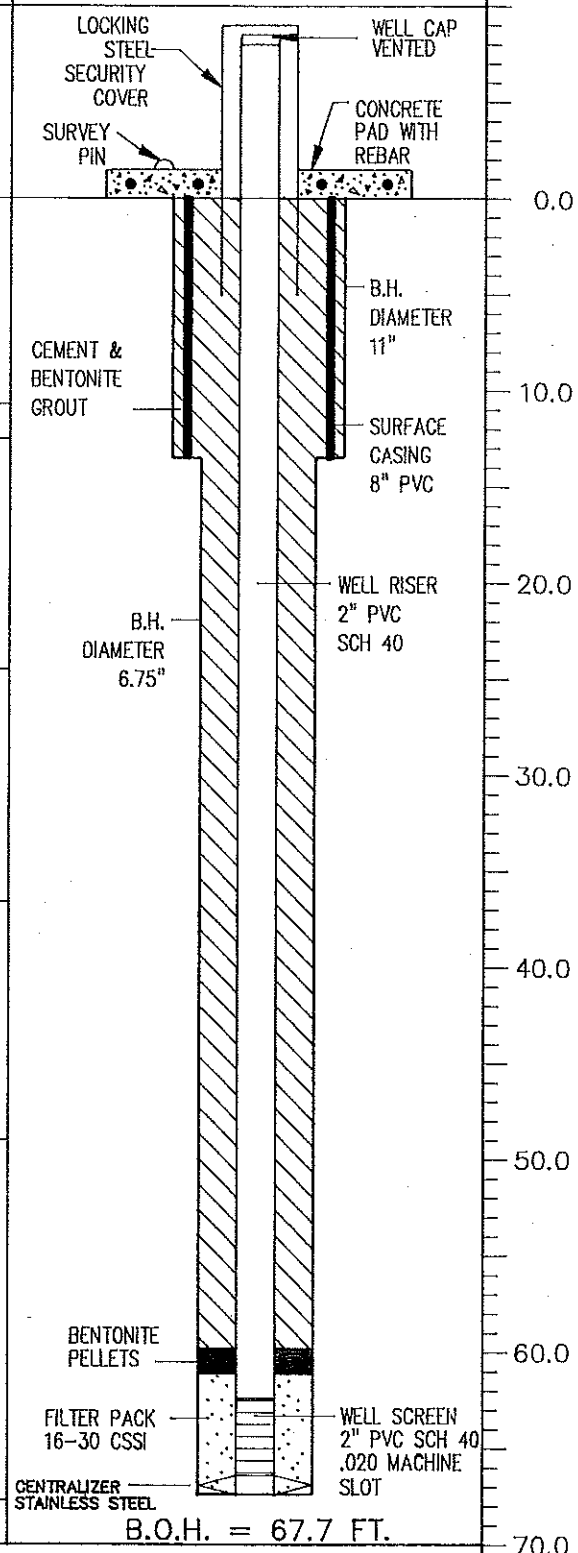
HOT SPRINGS, ARKANSAS 71913
(501) 767–2366

Well Record P–1A
Job Name/Number 7–2397–0101
Coordinates N. 3697.6 E. 5001.5
Installation Date 10–13–89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7–2397–0101–047 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
492.12				
490.69				
490.2	0.0	SAND: brown to red, fine to coarse grained, silty, clayey, pebbly @ 3.5 to 5.0: roots and branches		
	10.0	CLAY: red brown, some silt		
		CLAY: red brown and gray, some silt @ 17.7 to 20.3: silty @ 11.5 to 13.5 and 14.5 to 15.5: sand: yellow orange and gray, very fine grained, silty		
	20.0			
		SAND: yellow orange to light brown, very fine to fine grained, silty some clay to clayey @ 27.7 to 28.4, 30.8 to 31.2, 32.5 to 33.2, 33.5 to 34.2: clay: yellow and gray, silty, sandy		
	30.0			
		CLAY: gray to dark gray @ 37.1 to 37.5; silty @ 40.8 to 42.3 and 44.0 to 47.5: sand; yellow orange and gray, very fine grained, silty, thinly bedded		
	40.0			
	50.0	SAND: yellow orange and gray, very fine to fine grained, silty, some clay @ 54.5, 56.5, 60.5 to 61.2, 61.9 to 63.0, 65.0 to 66.0: clay: brown and gray, some silt, some sand, very fine		
	60.0			



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HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-1C

Job Name/Number 7-2397-0101

Coordinates N. 3707.4 E. 5008.5

Installation Date 10-5-89

Drilling Method ROTARY WASH

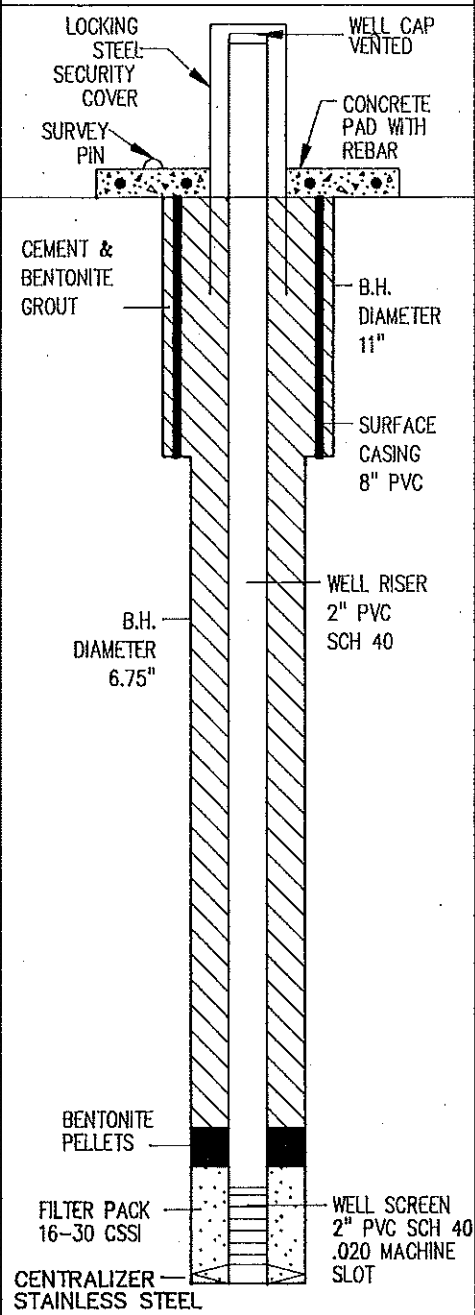
Drilled By WINNEK Logged By PWB

ACAD NO. 7-2397-0101-042 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
492.23				
490.95				
490.5	0.0	SAND: brown to red, fine to coarse grained, silty, clayey, pebbly @ 3.5 to 5.0: roots and branches		
	10.0	CLAY: red brown, some silt		
		CLAY: red brown and gray, some silt @ 17.7 to 20.3: silty @ 11.5 to 13.5 and 14.5 to 15.5: sand: yellow orange and gray, very fine grained, silty		
	20.0			
		SAND: yellow orange to light brown, very fine to fine grained, silty, some clay to clayey @ 27.7 to 28.4, 30.8 to 31.2, 32.5 to 33.2, 33.5 to 34.2: clay; yellow and gray, silty, sandy		
	30.0			
		CLAY: gray to dark gray @ 37.1 to 37.5: silty @ 40.8 to 42.3 and 44.0 to 47.5: sand: yellow orange and gray, very fine grained, silty, thinly bedded		
	40.0			
	50.0	SAND: yellow orange and gray, very fine to fine grained, silty, some clay @ 54.5 and 56.5: clay: brown and gray, some silt, some sand, very fine		
	60.0			

Well Completion Detail



B.O.H. = 56.6 FT.

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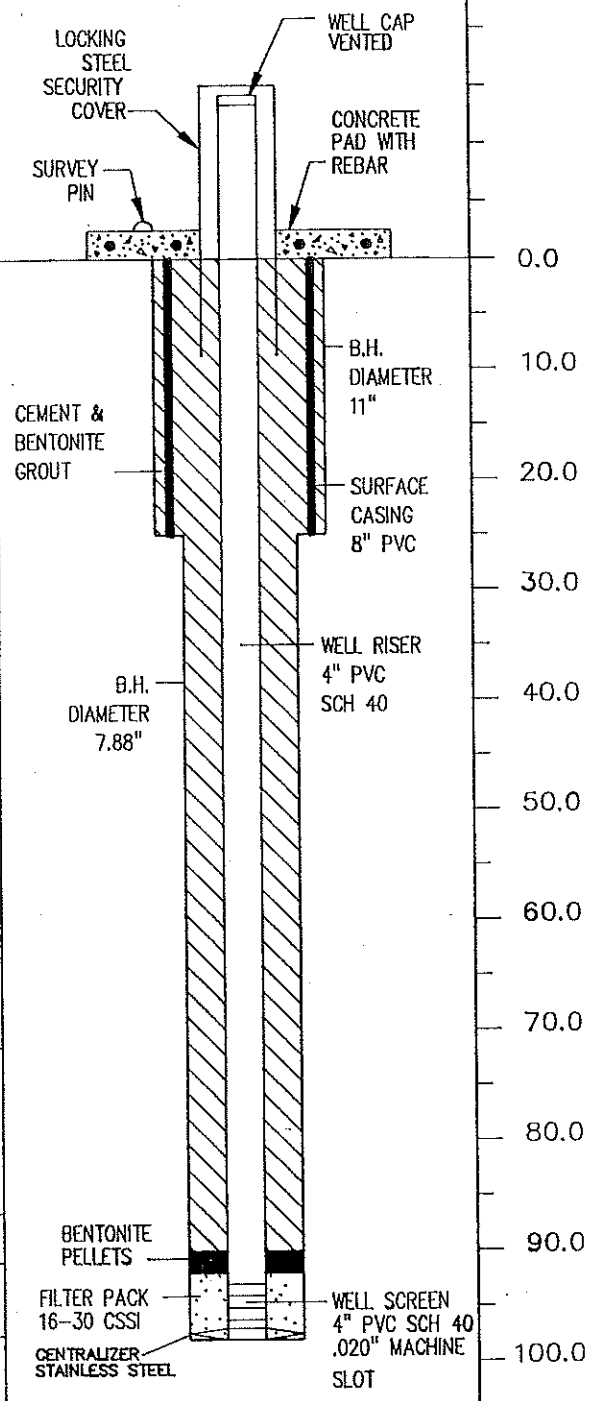
928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-1D
Job Name/Number 7-2397-0101
Coordinates N. 3717.2 E. 5014.6
Installation Date 10-5-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-041 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
495.79				
494.42				
493.9	0.0	GRAVEL: red brown, sandy, clayey @1.0 to 3.5: clay: red brown, silty, sandy, w/pebbles @3.5: wood fragments		
	10.0	CLAY: gray and yellow, some silt, some sand @ 13.0 to 14.0; sand; yellow orange, very fine grained		
	20.0	SAND: yellow orange, very fine grained with thin clay interbeds		
		CLAY: yellow orange w/gray, silty, some sand		
	30.0	SAND: gray, very fine grained @ 33.5 to 36.5: silty, clayey @ 36.5 to 37.5, 42.0 to 43.5; clay: yellow orange with gray, silty, some sand		
	40.0			
	50.0	CLAY: gray and dark gray @ 47.6, 48.8, and 53.6: carbonaceous, pyritic @ 49.3 to 52.5: sand: gray, very fine grained		
		SAND: gray, very fine grained, silty		
	60.0	CLAY: gray to dark gray, some silt @ 61.7 to 64.0; sand; gray as thin laminae @ 64.0 to 66.0, 67.2 to 68.2 and 69.8; sand; gray very fine grained		
	70.0	SAND: gray, very fine to fine grained, silty @ 75.5 to 76.5, 77.5 to 79.0 and 80.7 to 83.0; clay; gray with dark gray, silty @ 82.0 to 82.2; lignite, pyritic		
	80.0			
		CLAY: gray to dark gray, silty, sandy		
	90.0	SAND: gray, very fine grained, silty, some clay carbonaceous, pyritic @ 95.9 to 96.5; clay; dark gray, some silt		
	100.0			
	110.0			

Well Completion Detail



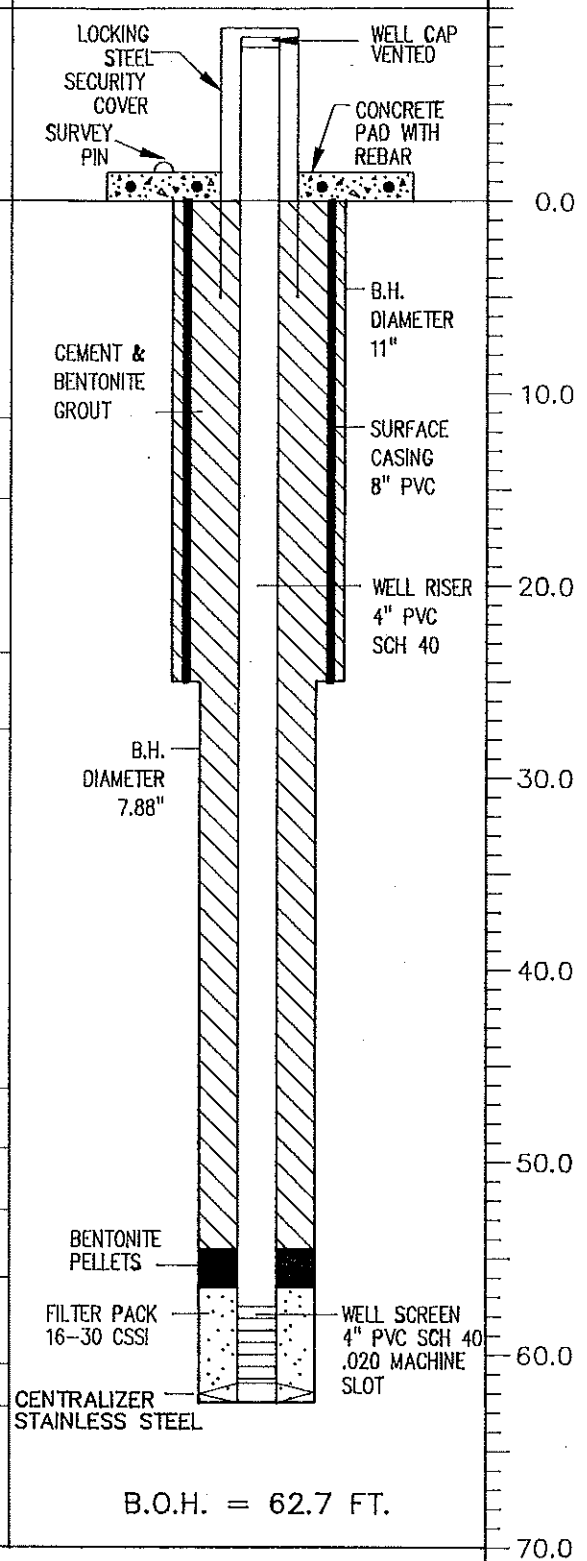
B&F ENGINEERING, INC.

928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-2A
Job Name/Number 7-2397-0101
Coordinates N. 3655.1 E. 5377.1
Installation Date 10-8-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-046 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
495.89				
494.46				
494.0	0.0	GRAVEL: red brown, sandy, clayey @ 1.0to 3.5: clay: red brown, silty, sandy, w/pebbles @ 3.5: wood fragments		
	10.0	CLAY: gray and yellow, some silt, some sand @13.0 to 14.0: sand: yellow orange, very fine grained		
		SAND: yellow orange, very fine grained with thin clay interbeds		
	20.0	CLAY: yellow orange with gray, silty, some sand		
		SAND: gray, very fine grained @ 33.5 to 36.5: silty, clayey @ 36.5 to 37.5, 42.0 to 43.5: clay: yellow orange with gray, silty, some sand		
	30.0			
	40.0	CLAY: gray and dark gray @ 47.6 and 48.8: carbonaceous, pyritic		
	50.0	SAND: gray, very fine grained		
		CLAY: dark gray @ 53.6: carbonaceous, pyritic		
		SAND: gray, very fine grained, silty		
	60.0	CLAY: gray to dark gray, some silt @ 61.7 to 62.7: sand: gray, as thin laminae		



B.O.H. = 62.7 FT.

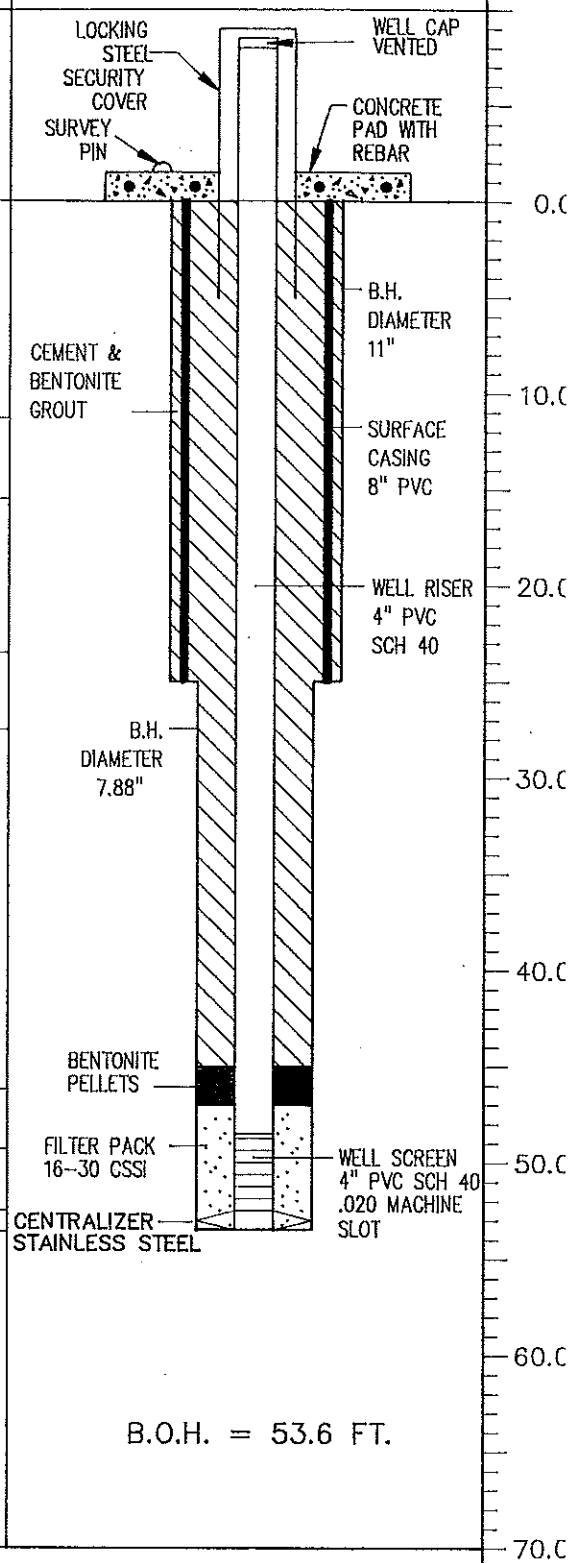
B&F ENGINEERING, INC.

928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-2C
Job Name/Number 7-2397-0101
Coordinates N. 3649.0 E. 5372.7
Installation Date 10-12-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-043 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
495.92				
494.61				
494.1	0.0	GRAVEL: red brown, sandy, clayey @ 1.0to 3.5: clay: red brown, silty, sandy, w/pebbles @ 3.5: wood fragments		
	10.0	CLAY: gray and yellow, some silt, some sand @13.0 to 14.0: sand: yellow orange, very fine grained		
		SAND: yellow orange, very fine grained with thin clay interbeds		
	20.0	CLAY: yellow orange with gray, silty, some sand		
		SAND: gray, very fine grained @ 33.5 to 36.5: silty, clayey @ 36.5 to 37.5, 42.0 to 43.5: clay: yellow orange with gray, silty, some sand		
	30.0			
	40.0			
		CLAY: gray and dark gray @ 47.6 and 48.8: carbonaceous, pyritic		
	50.0	SAND: gray, very fine grained		
		CLAY: dark gray @ 53.6: carbonaceous, pyritic		
	60.0			



B.O.H. = 53.6 FT.

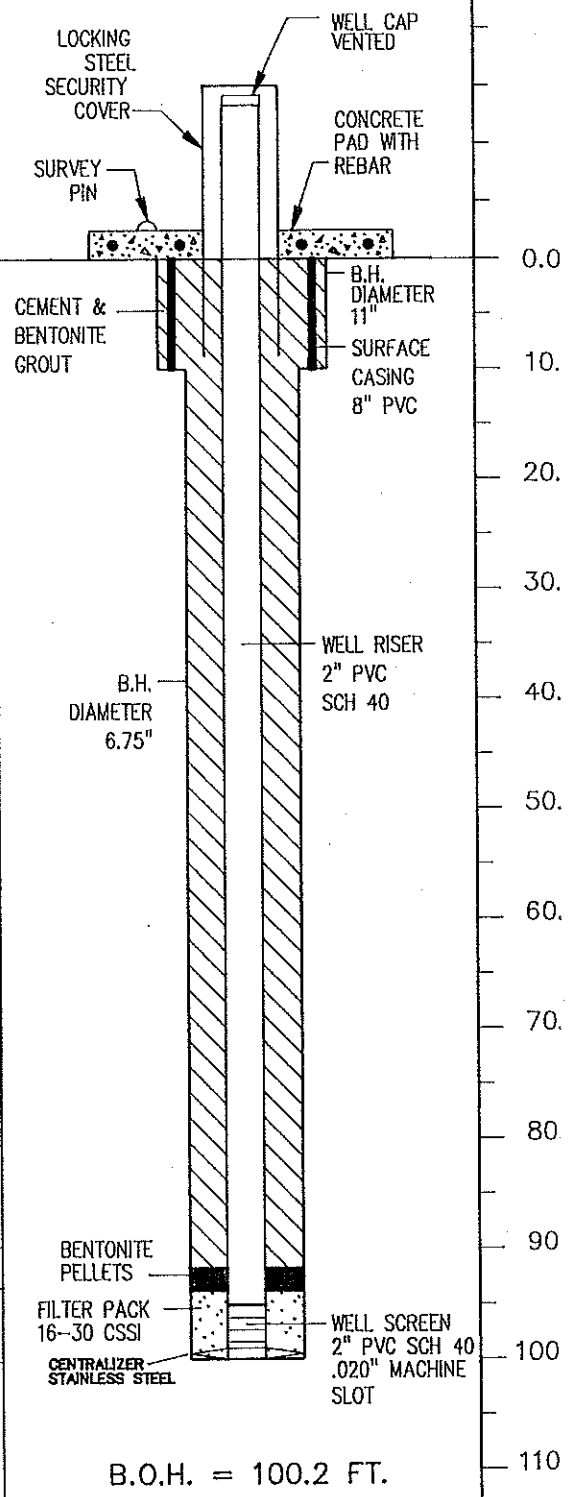
B&F ENGINEERING, INC.

928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-2D
Job Name/Number 7-2397-0101
Coordinates N. 3642.6 E. 5368.4
Installation Date 10-13-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-044 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
484.55				
483.16				
482.7	0.0	CLAY: red brown with gray, silty, some sand @ 0 to 2.5: very sandy, pebbly		
		CLAY: gray, some silt–sand, very fine		
	10.0	CLAY: red brown and yellow orange, silty, sandy, very fine grained @13.5 to 14.5 very sandy		
		SAND: gray, red brown and yellow orange, very fine to fine grained, some clay to clayey, silty @19.1 to 19.4: clay: yellow orange, silty		
	20.0	CLAY: gray, silty, sandy very fine, sand decreasing with depth		
		SAND: gray, very fine grained, silty, clayey @25.0 to 26.5: clay: yellow orange, and gray		
	30.0	CLAY: yellow orange and gray, silty @ 29.1 to 29.5: carbonaceous		
		SAND: gray with yellow orange, very fine to fine grained, silty, friable @36.7 to 37.3: clay: gray, with sand laminae		
	40.0	CLAY: gray, silty @ 47.0 to 50.0 and 53.2 to 55.0: very sandy		
	50.0			
	60.0	SAND: light brown, very fine to fine grained, friable @ 62.9 to 64.0, 61.5 to 67.0: clay: gray to dark gray, silty, sandy		
	70.0	CLAY: gray to dark gray, silty, some sand, very fine @ 69.4 to 70.4, and 73.0 to 75.9: sand: gray, very fine to fine grained @ 77.8 to 80.5: sandy		
	80.0	SAND: gray, very fine grained @ 84.5 and 87.6: clay: gray to dark gray		
	90.0	CLAY: gray to dark gray @93.4: carbonaceous		
		SAND: gray, very fine grained, carbonaceous, some clay		
	100.0			
	110.0			



B.O.H. = 100.2 FT.

B&F ENGINEERING, INC.

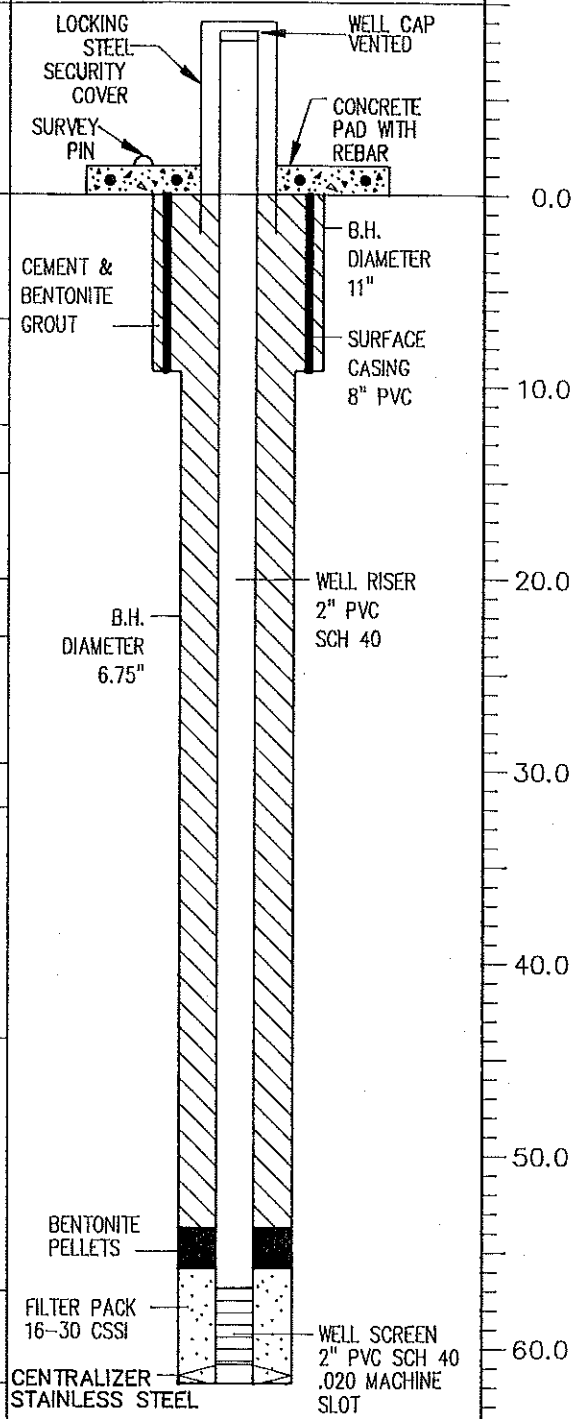
928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767–2366

Well Record P–4A
Job Name/Number 7–2397–0101
Coordinates N. 3419.0 E. 5353.5
Installation Date 9–12–89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7–2397–0101–048 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
484.55				
483.18				
482.7	0.0	CLAY: red brown with gray, silty, some sand @ 0 to 2.5: very sandy, pebbly		
	5.0	CLAY: gray, some silt--sand, very fine		
	10.0	CLAY: red brown and yellow orange, silty, sandy, very fine grained @ 13.5 to 14.5 very sandy		
	15.0	SAND: gray, red brown and yellow orange, very fine to fine grained, some clay to clayey, silty @ 19.1 to 19.4: clay: yellow orange, silty		
	20.0	CLAY: gray, silty, sandy, very fine; sand decreasing with depth		
	25.0	SAND: gray, very fine grained, silty, clayey @25.0 to 26.5: clay: yellow orange, and gray		
	30.0	CLAY: yellow orange and gray, silty @ 29.1 to 29.5: carbonaceous		
	35.0	SAND: gray with yellow orange, very fine to fine grained, silty, friable @36.7 to 37.3: clay: gray, with sand laminae		
	40.0			
	45.0	CLAY: gray, silty @ 47.0 to 50.0 and 53.2 to 55.0: very sandy		
	50.0			
	55.0			
	60.0	SAND: light brown, very fine to fine grained, friable		
	65.0			

Well Completion Detail



B.O.H. = 61.8 FT.

B&F ENGINEERING, INC.

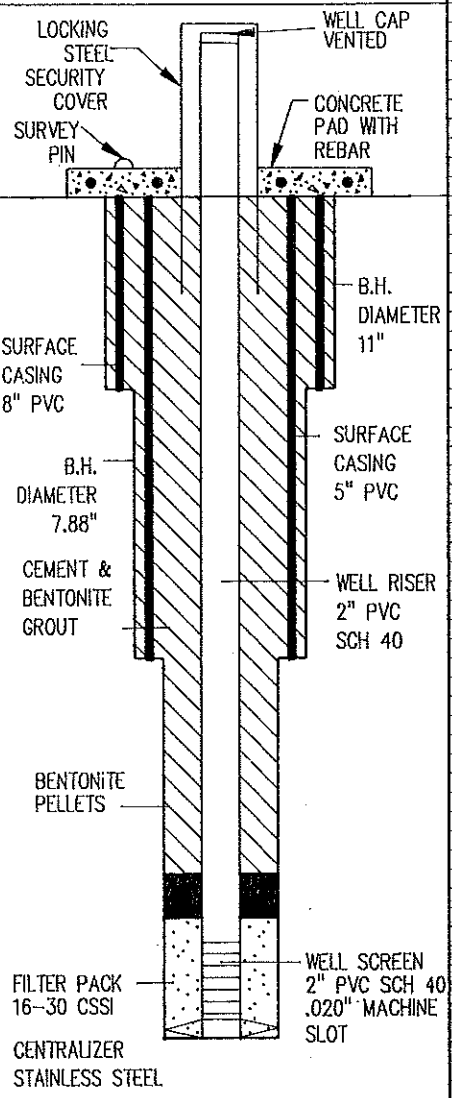
928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-4C
Job Name/Number 7-2397-0101
Coordinates N. 3420.1 E. 5343.2
Installation Date 9-19-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-038 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
484.03				
482.93				
482.4	0.0	CLAY: red brown with gray, silty, some sand @ 0 to 2.5: very sandy, pebbly		
	5.0			
		CLAY: gray, some silt–sand, very fine		
	10.0			
		CLAY: red brown and yellow orange, silty, sandy, very fine grained ● 13.5 to 14.5 very sandy		
	15.0	SAND: gray, red brown and yellow orange, very fine to fine grained, some clay to clayey, silty @ 19.1 to 19.4: clay: yellow orange, silty		
	20.0	CLAY: gray, silty, sandy, very fine; sand decreasing with depth		
		SAND: gray, very fine grained, silty, clayey @25.0 to 26.5: clay: yellow orange, and gray		
	25.0			
	30.0	CLAY: yellow orange and gray, silty ● 29.1 to 29.5: carbonaceous		
		SAND: gray with yellow orange, very fine to fine grained, silty, friable @36.7 to 37.3: clay: gray, with sand laminae		
	35.0			
	40.0			
	45.0			

Well Completion Detail



B.O.H. = 43.7 FT.

B&F ENGINEERING, INC.

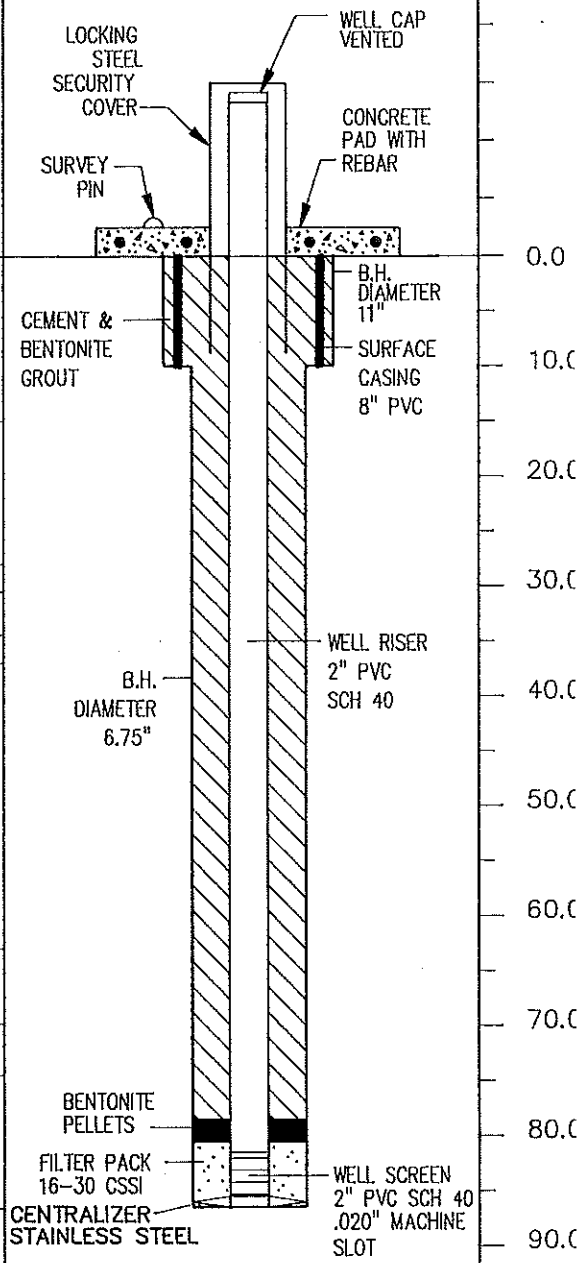
928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767–2366

Well Record P–4D
Job Name/Number 7–2397–0101
Coordinates N. 3410.6 E. 5347.4
Installation Date 9–26–89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7–2397–0101–036 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
480.82				
479.38				
478.9	0.0	CLAY: silty, sandy @ 3.5 to 9.7, 13.0 to 13.5: sand: very fine grained, clayey		
	10.0			
		SAND: yellow orange, very fine grained, silty, clayey @ 23.0 to 24.8 clay: gray with yellow orange, silty sandy		
	20.0			
	30.0	CLAY: gray and light brown, trace of silt		
		SAND: light brown, very coarse grained, pebbly, clayey		
		CLAY: brown with yellow orange, trace silt, occasional silt pits @ 34.7 changing to gray		
	40.0			
		SAND: gray, very fine grained, silty, some clay @ 37.4 to 38.3, 39.5 to 39.7, 44.4, 45.4 to 46.5, 50.3 to 51.5, 53.8 to 55.3, 60.5 to 61.0; clay; gray silty to sandy		
	50.0			
	60.0			
		CLAY: dark gray, silty to sandy @ 64.3 carbonaceous material		
	70.0			
		SAND: gray, very fine grained, silty @ 71.0 to 71.2; clay, dark gray, silty sandy		
		CLAY: gray to dark gray, silty sandy @ 77.5 to 81.4, 85.0 to 86.6 sand: thinly interbedded		
	80.0			
	90.0			
	100.0			
	110.0			

Well Completion Detail



B.O.H. = 86.6 FT.

B&F ENGINEERING, INC.

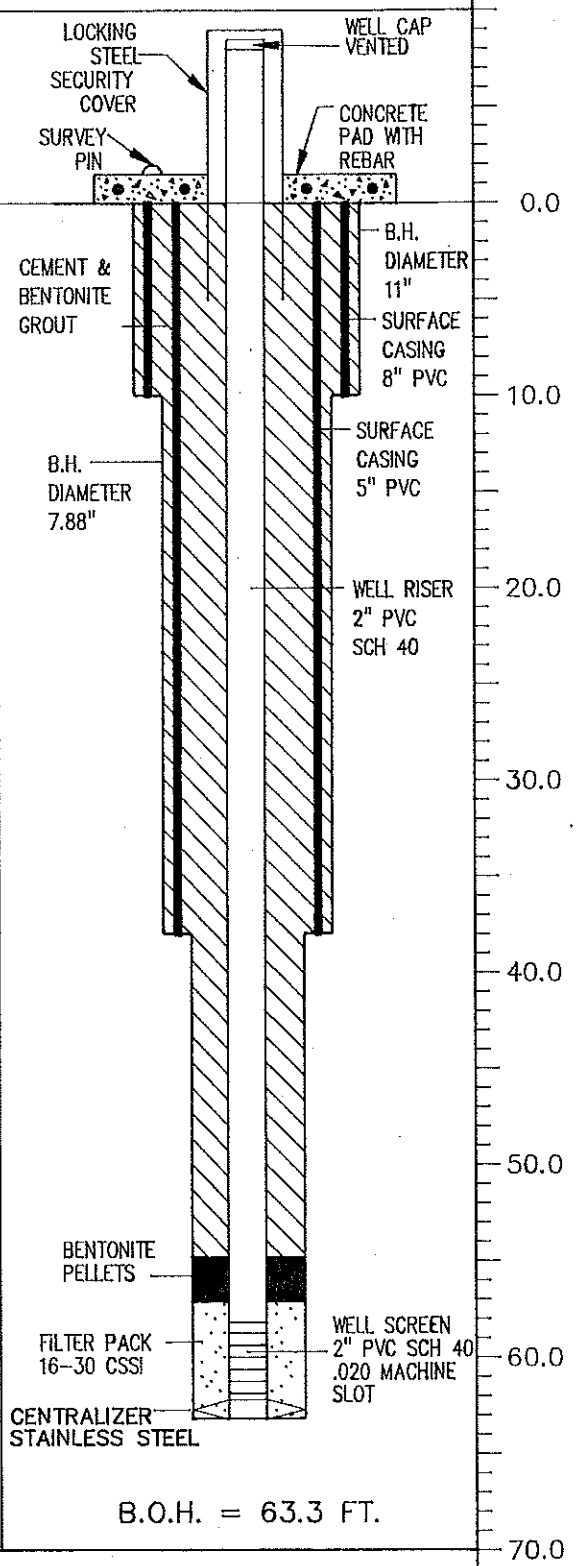
928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-5A
Job Name/Number 7-2397-0101
Coordinates N. 3667.4 E. 5628.1
Installation Date 10-15-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB

ACAD NO. 7-2397-0101-045 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
481.21				
479.67				
479.2	0.0	CLAY: silty sandy @ 3.5 to 9.7, 13.0 to 13.5: sand: very fine grained, clayey		
	10.0			
	20.0	SAND: yellow orange, very fine grained, silty, clayey @ 23.0 to 24.8: clay: gray with yellow orange, silty, sandy		
	30.0	CLAY: gray and light brown, trace of silt		
		SAND: light brown, very coarse grained, pebbly, clayey		
		CLAY: brown with yellow orange, trace of silt, occasional silt pits @ 34.7 changing to gray		
	40.0	SAND: gray , very fine grained, silty, some clay @ 37.4 to 38.3, 39.5 to 39.7, 44.4, 45.4 to 46.5, 50.3 to 51.5, 53.8 to 55.3, 60.5 to 61.0; clay gray silty to sandy		
	50.0			
	60.0			



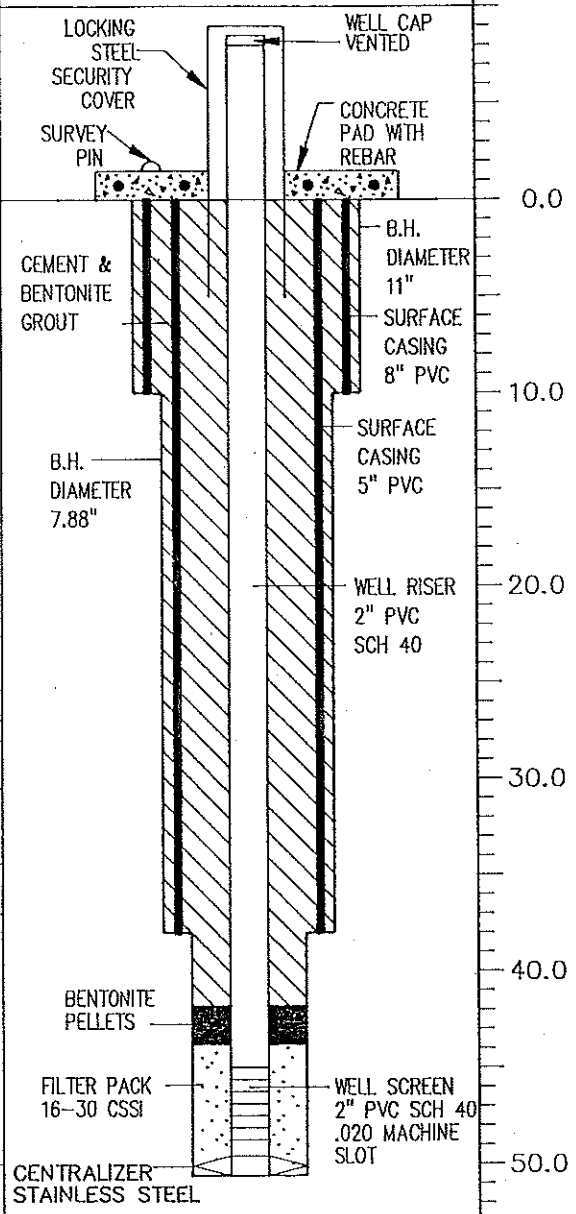
B&F ENGINEERING, INC.

928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-5C
Job Name/Number 7-2397-0101
Coordinates N. 3657.3 E. 5628.1
Installation Date 10-18-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-040 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
481.39				
479.86				
479.4	0.0	CLAY: silty, sandy @ 3.5 to 9.7, 13.0 to 13.5: sand: very fine grained, clayey		
	15.0	SAND: yellow orange, very fine grained, silty, clayey @ 23.0 to 24.8: clay: gray with yellow orange, silty, sandy		
	30.0	CLAY: gray and light brown, trace of silt		
		SAND: light brown, very coarse grained, pebbly, clayey		
	35.0	CLAY: brown with yellow orange, trace silt, occasional silt pits @ 34.7 changing to gray		
	40.0	SAND: gray, very fine grained, silty, some clay @ 37.4 to 38.3, 39.5 to 39.7, 44.4, 45.4 to 46.5, 50.3 to 50.6: clay: gray, silty to sandy		
	50.0			



B&F ENGINEERING, INC.

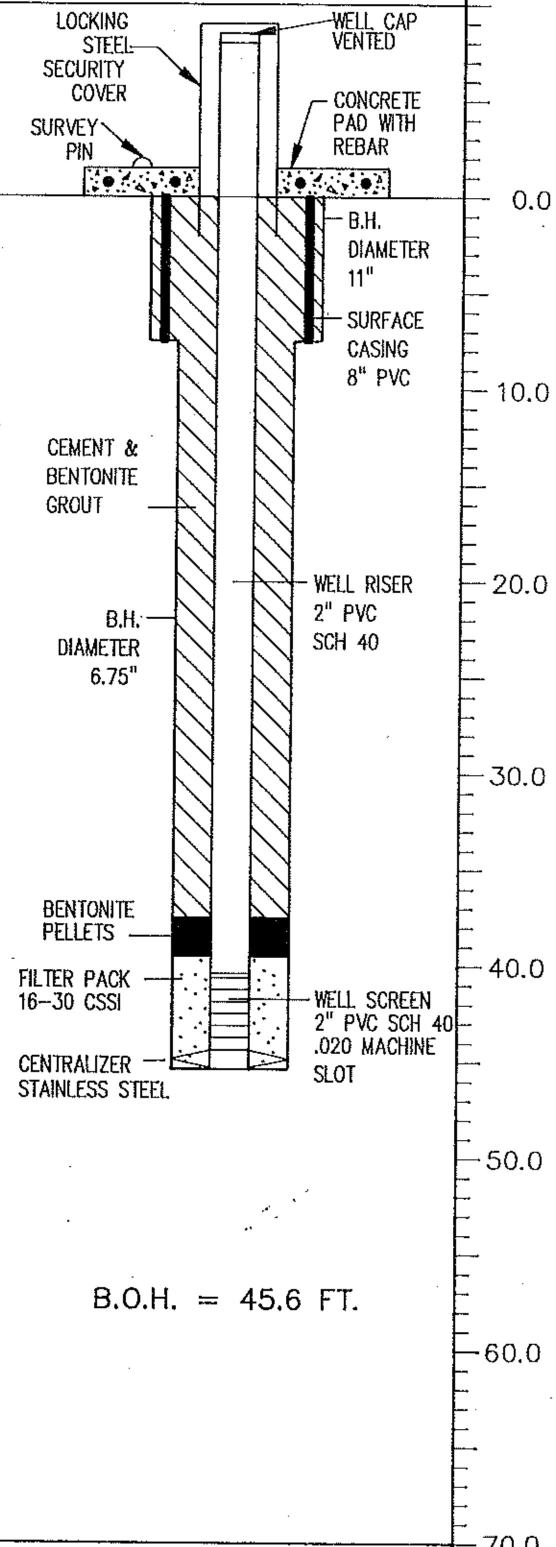
928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-5D
Job Name/Number 7-2397-0101
Coordinates N. 3647.4 E. 5627.6
Installation Date 10-18-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-039 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
459.55				
458.19				
457.7	0.0	CLAY: red brown, silty, very sandy, with occasional pebbles		
		CLAY: gray and brown, silty, some sand		
	10.0			
		SAND: gray and yellow orange very fine grained		
	20.0			
		CLAY: gray to dark gray, silty sandy		
		SAND: gray, very fine grained, clayey		
	30.0	CLAY: gray to dark gray, silty, sandy, with occasional laminae @ 32.8 to 33.6: sand: clayey		
	40.0	SAND: gray and brown, very fine grained, some clayey, occasionally carbonaceous		
	50.0			
	60.0			

Well Completion Detail



B.O.H. = 45.6 FT.

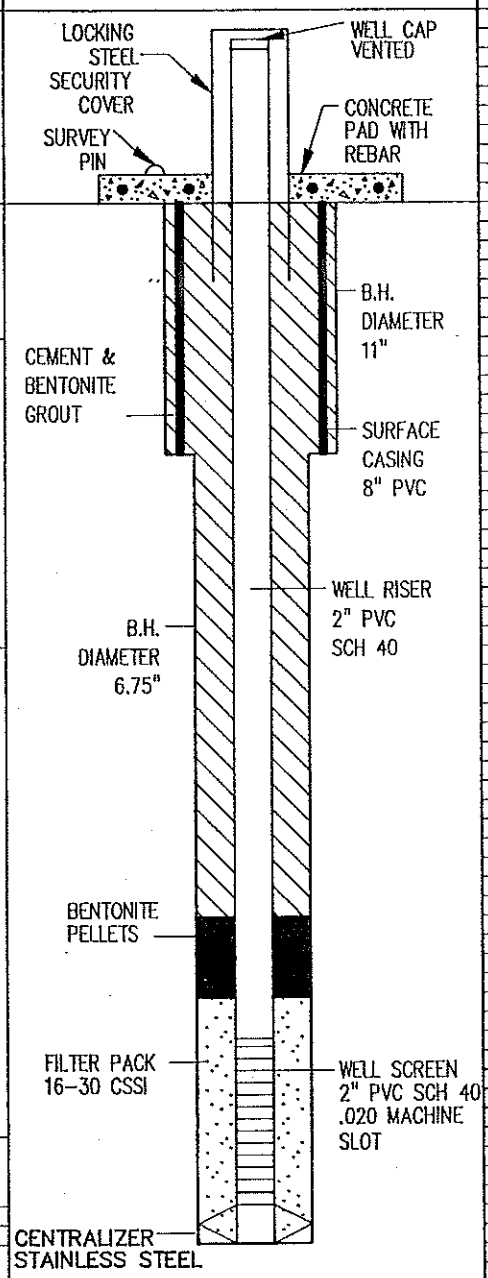
B&F ENGINEERING, INC.

928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-6A
Job Name/Number 7-2397-0101
Coordinates N. 3963.8 E. 5556.7
Installation Date 9-10-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-035 Page 1 of 1

WELL INSTALLATION RECORD

Elev. (Feet)	Depth (Feet)	Description	USC USGS	Graphic Log
459.84				
458.40				
457.9	0.0	CLAY: red brown, silty, very sandy with occasional pebbles		
	5.0	CLAY: gray and brown, silty, some sand laminae		
	10.0			
		SAND: gray and yellow orange, very fine grained		
	15.0			
	20.0			
	25.0	CLAY: gray to dark gray, silty, sandy		
		SAND: gray, very fine grained, clayey		
		CLAY: gray to dark gray, with sand, sand decreasing with depth		
	30.0			



B.O.H. = 27.0 FT.

B&F ENGINEERING, INC.

928 AIRPORT ROAD
HOT SPRINGS, ARKANSAS 71913
(501) 767-2366

Well Record P-6C
Job Name/Number 7-2397-0101
Coordinates N. 3957.4 E. 5549.5
Installation Date 9-11-89
Drilling Method ROTARY WASH
Drilled By WINNEK Logged By PWB
ACAD NO. 7-2397-0101-037 Page 1 of 1